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Vol. 14. No. 12. pp. 407-444. December, 1944

IMPERIAL MYCOLOGICAL INSTITUTE
7 MAR 1945

THE VETERINARY BULLETIN

1944

IMPERIAL BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

Price 5/- net

Annual Subscription £2

Imperial Agricultural Bureaux.

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IMPERIAL BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 14.] December, 1944. [No. 12.

DISEASES CAUSED BY BACTERIA AND FUNGI

WATTS, P. S., & STIRLING, A. C. (1944). **Mastitis and the Resazurin Test.**—*Vet. Rec.* **56.** 83–85. **2602**

Milk samples from 973 quarters of 247 cows in eight herds were examined for the presence of mastitis organisms, for the total bacterial content, for the total cell count, and also by the resazurin reduction test. Fore-milk quarter samples, individual cow samples, and composite churn samples were tested separately.

There was found to be a very close relationship between the results of the cell count and the resazurin test after 10 and 30 min. incubation, but results were not as definite after 60 min. The bacterial counts did not consistently agree with the results of the cell count and resazurin test.

Samples of milk found bacteriologically to be from normal quarters and from quarters infected with *Streptococcus agalactiae* respectively were examined by the resazurin test, and it was found that reduction below a disc reading of 4 gave evidence of *Str. agalactiae* infection, but that failure to reduce resazurin did not necessarily indicate freedom from infection. It was, therefore, concluded that the resazurin test is of very limited value for the routine diagnosis of mastitis.

Comparison of quarter samples, individual cow samples, and churn samples, showed that even relatively low dilution of infected samples markedly reduced the reaction to resazurin, and that a churn with up to 73% of the milk from cows infected with mastitis did not give a positive reaction to the resazurin test.—J. O. L. K.

ROSENOW, E. C. (1942). **Demonstration of the Association of Specifically Different Alpha Streptococci with Various Diseases, and Methods for the Preparation and Use of Specific Antiserums and Vaccines in Diagnosis and Treatment.**—*Amer. J. clin. Path.* **12.** 339–356. **2603**

Viridans streptococci isolated from the systemic lesions of such diseases as encephalitis and arthritis were used to immunize animals, and the resultant immune sera were used in a series of tests with strains of *viridans* streptococci isolated from similar and dissimilar diseases. Precipitin tests, skin sensitivity tests and agglutination tests were carried out with sera prepared from these strains, some being of homologous and some of heterologous clinical origin; the percentage incidence of positive serum precipitin and agglutination tests was statistically significant for homologous as opposed to heterologous origins of the strains used. A figure is given of distribution curves of electrophoretic time and mobility of streptococci according to the embryological origin of the tissues affected. These electrophoresis tests are not described in any detail. The clinical significance and application of these findings are discussed.—D. L. ROBARTS.

*VAVAKO, D. (1941). **[Experiments with Pasteur's Anthrax Vaccination Method: Causes of its Insufficiency and of Accidents].**—*Clin. vet., Milano.* **64.** 5–13. [Abst. from abst. in *Wien. tierärztl. Mschr.* **28.** 552–553]. **2604**

The introduction in 1934 of anthrax vaccination in Albania has led to some reduction in the very heavy losses hitherto incurred, but results have not been entirely satisfactory. It is stated that the vaccine used loses its efficacy through bacteriolysis in less than five days when kept in an incubator at 37°C., that it loses its potency in 4–7 days in summer, even at room temperature, and that the spores remain viable when the vaccine is kept in a refrigerator.

The author speaks of the need for an international standard of dosage. [The nature of the vaccine used is not clear from the information given in the abstract.]
—ANN F. RUSSELL.

VELU, H., GAVAUDAN, P., & SOULIÉ, P. (1943). Etude histologique et pathogénie du charbon pulmonaire expérimental. **[Histological and Pathological Study of Experimental Pulmonary Anthrax].**—*C. R. Soc. Biol. Paris.* **137.** 573–574. **2605**

Inhalation or ingestion of 1–500 anthrax spores, inactive by themselves, sets up pulmonary anthrax in mice if combined with inhalation of chlorine. The bacilli invade the alveolar wall and capillaries, provoking marked congestion and oedema. The reaction of the histiocytes is marked but variable, involving the alveoli, and the structure of the alveoli is finally destroyed. The alveolus seems to be the site of multiplication of the organisms, but post- and peritracheal lesions are noted in the region of damage to the epithelium. The bacilli appear in the alveoli as single organisms, chains, or later as dense masses of polymorphic rods. Phagocytosis is not marked. The appearance of the lung is the same in mice dying 48–72 hours after this method of infection as in those dying six days after subcutaneous inoculation of spores.—R. M. LOOSMORE.

TIPPETT, S. G. (1944). **Tuberculosis in the Animal World.**—*Vet. J.* **100.** 118–123. **2606**

T. advocates the eradication of bovine TB. and refutes the suggestion that, as a result, the susceptibility of the human population would be increased. He stresses the need for immediate control measures. He supports pasteurization of the milk supply and the marking of cattle which react to the tuberculin test. He also advocates the intensification of research on vaccination.—C. M. FORD.

URBAIN, A., BULLIER, P., & NOUVEL, J. (1943). Un cas de tuberculose sur un phoque (*Phoca vitulina L.*) **[TB. in a Seal].**—*Bull. Acad. vét. Fr.* **16.** 116–117. **2607**

A case report. A seal nearly four years in captivity in a zoological park developed a capricious appetite over a period of some months, with a progressive emaciation. Death occurred suddenly after a period of apparent health. On P.M. examination the subcutaneous fat measured 0·5 cm. in thickness instead of the usual 8–10 cm. There were fine nodules, like grains of sand and numbering 5–6 per sq. cm. on the surface of both lungs. The abdominal organs were normal.

Human type tubercle bacilli were isolated from the thoracic lesions. The authors draw attention to the fact that the seal lived in 350 cu. metres of water, 20–30 cu. metres of which were changed daily. In their opinion, tuberculous expectorate was the source of infection.—S. JAMIESON.

KINGHORN, H. M., & DWORSKI, M. (1939). **Vaccination against Tuberculosis. Comparative Results Obtained with Koch's "Bacillen Emulsion", Calmette's B.C.G. and the Caseous Vaccine of the Saranac Laboratory: Fourth Communication.**—*N.Y. St. J. Med.* **39.** 810–815. **2608**

This article deals with a continuation of previous work by the same authors. The object of the experiments now reported was the utilization of bovine caseous material as a vaccine in infected animals, on the hypothesis that such a vaccine might stimulate the production of anti-caseating substances. Caseous material from lung or lymph node lesions in cattle was dried in a vacuum over H_2SO_4 and the resulting material ground into a powder in a porcelain ball mill, this powder forming the basis of a suspension for ultimate use. The value of this vaccine was compared in rabbits and g. pigs with Koch's "bacillen emulsion" and with BCG. On the result of 12 years' work, it is concluded that the "caseous" vaccine gave much more protection than Koch's "bacillen emulsion". The "caseous" and BCG vaccines gave practically the same degree of protection, no animals developing advanced TB. 50% of the g. pigs immunized with Koch's "bacillen emulsion" developed advanced TB.

In an extension of the experiment BCG appeared to confer more durable infection than the "caseous" vaccine. The authors regard BCG as a safe and good vaccine and consider that both this and the "caseous" vaccine have real immunizing value.—H. I. FIELD.

HILL, H. W. (1944). **"Speed of Reaction" Hypothesis. Its Numerical Foundations in Respect to the Tubercle Bacillus.**—*Amer. Rev. Tuberc.* **49.** 414–422. [Spanish summary]. **2609**

H. puts forward a hypothesis to explain why three end-points are possible following infection in human beings with the human type tubercle bacillus, namely :– (1) no material damage ; (2) material damage ending in recovery ; (3) material damage ending in death. He assumes that immunity response is equal in all human beings, and that the vital factor, which is genetic, is the speed of this specific response following infection. In class (1) above the response is rapid, overcoming infection before damage results ; in classes (2) and (3) the responses are relatively slower, and in class (3) the rate of fission of the organisms is too far advanced for the immunity response to neutralize the organisms. In attempted confirmation of this hypothesis, H. presents several hypothetical examples of infection, and by them attempts to prove that the "speed of reaction" factor alone dictates the group into which the case will fall irrespective of the infecting dose. These examples clearly show how the infection will end and, moreover, explain different degrees of infection within the groups. The variation in incubation periods depends also on the infecting dose, but the latter does not dictate the course of the disease.

The following extract shows the lines along which the hypothesis is worked out.

"If the immunity response lags somewhat, as apparently it always does, let this lag be such that the response occurs just after fission 1. Then the initial dose x bacilli becomes, by fission 1, $2x$ bacilli ; but $2x$ bacilli in the presence of x immunity (from the initial dose) leaves only x bacilli to multiply (fission 2) = $2x$ bacilli. The first fission product (also $2x$ bacilli) has by now induced $2x$ immunity. Hence $2x$ bacilli + $2x$ immunity = 0 bacilli left active."

H. suggests that the hypothesis may be applied to affections other than TB., *e.g.* human poliomyelitis, in which the same three groups appear clinically.
—R. M. LOOSMORE.

COHN, M. L. (1944). **Growth of Human Tubercle Bacilli under Restricted Air Conditions.**—*Amer. Rev. Tuberc.* **49.** 463–470. [Spanish summary]. [Author's English summary copied *verbatim*]. **2610**

The growth of submerged tubercle bacilli in non-protein liquid media is usually sparse and is affected appreciably by any factors or influences which retard the ready exchange of air or oxygen into the medium. Such effects may be particularly significant when growing tubercle bacilli [are] submerged in a poor nutrient liquid medium but play very little part when growing them on the surface of a particularly good nutrient medium for small plantings, such as are used for diagnostic culture.

The retarding effects noted when growing submerged cultures in a liquid non-protein synthetic medium and using paraffined cotton stoppers are caused by the use of paraffin rather than any particular method of cleaning the glassware or preparing suspensions of the tubercle bacilli. The tubercle bacillus is an aerobe primarily and therefore grows best *in vitro* with a plentiful supply of air (oxygen). It is capable of sparse growth in almost air (oxygen) exhausted surroundings on a good nutrient such as egg-yolk, but will not grow under the conditions of a fairly good vacuum (about 1/100 atmosphere).

Although it has not been proved in these experiments that human tubercle bacilli utilize other than free oxygen, it is shown that multiplication of the bacilli can occur under extreme conditions of oxygen privation when a good nutrient medium is used.

PARAF, J., DESBORDES, J., BUU-HOÏ, RATISMAMANGA, A. R., & CAGNIANT, P. (1944). Production du phénomène de Koch par des acides gras synthétiques α-α disubstitués. **[Production of Koch's Phenomenon by Synthetic α-α Disubstituted Fatty Acids].**—*C. R. Soc. Biol. Paris.* **138.** 12–14. **2611**

Lesions resembling those of TB. were produced in g. pigs by the injection of synthetic α-α disubstituted fatty acids in olive oil. Nine days after injection, the animals gave a positive reaction to the intradermal tuberculin test. Subsequent tests showed that the reaction became more marked until the 15th day and then gradually decreased, and disappeared by the 24th day. Inoculation of these sensitized animals with virulent tubercle bacilli gave rise to an atypical Koch's phenomenon.

On the other hand, the injection of synthetic α–α disubstituted fatty acids into animals already rendered allergic by infection with virulent tubercle bacilli provoked a typical Koch's phenomenon.

It would seem that tuberculous intoxication and allergy depend on the lipoids of the bacillus, and no doubt comprise both humoral and enzymatic alterations.
—ISOBEL W. BROCKLEHURST.

PALMEIRO, J. M. (1942). Um caso de pasteurelose aviária no gato. **[Avian Type Pasteurellosis in a Cat].** —*Rev. Med. vet. Lisboa.* **37.** 168–170. **2612**

P. describes pasteurella infection in a cat. The animal died suddenly after eating the flesh of a duck which had died. Examination of other ducks which died at the same time disclosed pasteurella infection and pasteurella were easily isolated from the cat's blood. The organism from the cat did not ferment the same carbohydrates as did the pasteurella pathogenic for the birds, and it was much more rapidly lethal to pigeons, g. pigs and rats. P. questions whether it is a new species or an adaptation of an avian species to a new host.—MILLER WATSON.

*OLIN, G. (1942). Tularämiens förekomst, ursprung och spridningssätt i Sverige. **[Tularaemia in Sweden].** —*Nord. hyg. Tidskr.* **23.** 178. [Abst. from abst. in *Maanedsskr. Dyrlaeger.* **55.** 69]. **2613**

In the years of 1931, 1934, 1937, 1938, 1939, and 1940 572 cases of tularaemia in man were observed in Sweden, the majority occurring in Gävleborg province in mid-Sweden and most of the remainder in the far north. Only a few cases had any history of contact with animals, so it is considered probable that mosquitoes may play a part as vectors. This idea is strengthened by the fact that *Pasteurella tularensis* was on one occasion conveyed to a g. pig by *Aëdes cinereus* [no details given in abst.].

1938 was a lemming year, *i.e.* a year when a cyclical "plague of lemmings" occurred in Norway, and tularaemia was observed in a great many lemmings found dead; 313 human cases also occurred in 1938, a connexion between these cases being implied.

Past. tularensis has been isolated from fleas taken from dead lemmings.—J. E.

HENNING, M. W., KEPPEL, J. J. G., & FLIGHT, C. H. (1943). **Equine Abortion.**—*J. S. Afr. vet. med. Ass.* **14.** 59–66. **2614**

A general review is given of the aetiology of equine abortion and the conditions which may be produced by *Salmonella abortus-equi.* Brief mention is made of the recent work done in the U.S.A. on equine abortion associated with a virus.

The authors investigated a severe outbreak of equine abortion in the Caledon district of the Cape Province. A large number of the mares which had aborted gave O reactions to the agglutination test at less than 1 : 50. Very irregular reactions were obtained with tests at intervals, so that it was only by repeated tests that positive reactors could be identified. Four young animals gave positive reactions. Two foetuses were obtained, from both of which *S. abortus-equi* was isolated; the sera of the dams did not give positive reactions until about a week after abortion. In order to detect carriers it is recommended that several tests should be carried out at intervals of two months.

—E. M. ROBINSON.

BISHOP, G., SCHATZ, W., & CANHAM, A. S. (1943). **Salmonella Enteritidis, Var. Dublin, Infection in Adult Cattle.**—*J. S. Afr. vet. med. Ass.* **14.** 67–72. **2615**

A case is described of diarrhoea in a cow in Natal, in which enteritis was found P.M. No bacteriological examination was made, but the serum of the animal gave a positive reaction to the agglutination test with *S. dublin.*

From the stomach contents of a 7½ months' foetus in which no brucella, vibrio, or trichomonas infection could be found, organisms of the *S. dublin* type were isolated; the serum of the dam gave a positive agglu. reaction for *S. dublin.*—E. M. ROBINSON.

DICKINSON, E. M., ROSENWALD, A. S., & MORRILL, D. R. (1944). **Comparison of the Tube and Rapid Serum Agglutination Tests for the Detection of Pullorum Disease in Turkeys.**—*Tech. Bull. Ore. agric. Exp. Sta.* No. 6. pp. 7. **2616**

Since HINSHAW *et al.* [*V. B.* **10.** 689.] had found that the stained-antigen rapid whole-blood test was approximately half as efficient in detecting turkey carriers of *Salmonella pullorum* as the tube test, it was decided to compare the tube and rapid serum agglutination tests.

A full description of the preparation of the antigens, both from the same four strains of *S. pullorum,* is given and also of the technique and apparatus used in carrying out the tests. Photographs of the equipment and of typical rapid serum agglutinations are included.

From 10,019 samples of blood, 678 positive reactions were obtained, 92·7% being positive to the tube method and 91·4% positive to the rapid aggln. test. Of the total diagnosed as positive, both tests were in agreement on 84·2%. Suspicious reactions were considered to be negative and were not recorded. It was noted that practically all the variations occurred between positive and suspicious reactions rather than between positive and negative reactions.—J. D. B.

GLOVER, J. S. (1944). **The Relationship of *S. Pullorum* Infection to Omphalitis.**—*Canad. J. comp. Med.* **8.** 123–124. **2617**

From March 1st to May 2nd 1944, 334 consignments of chicks (974 chicks) were examined. Omphalitis was found in 47 consignments and *S. pullorum* was found in 43 (138 chicks) of the 47. *S. pullorum* was also isolated from the chicks in 246 consignments, but these were not affected with omphalitis. The chicks of 41 consignments were free from disease.—P. J. G. P.

CECCALDI, J., GROSPERRIN, R., GUILHAUMOU, F., & MALBRANT, R. (1943). A propos du premier cas de brucellose contracté à Brazzaville. **[First Case of Undulant Fever Contracted at Brazzaville].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **2.** 189–197. **2618**

A case of undulant fever occurring at Brazzaville gave stronger agglutination reaction with strains of *Brucella abortus* than with those of *Br. melitensis.* The patient had drunk unheated, or only slightly heated milk; seven animals of the herd from which the milk had been obtained gave positive and four gave doubtful reactions to the agglutination test for *Br. abortus.* The bacillus was not isolated from either the human case or the cattle.—U. F. RICHARDSON.

DAUZATS, A. (1943). Une grave enzootie de charbon symptomatique au Cameroun. **[A Severe Epizootic of Blackleg in the Cameroons].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **2.** 283–298. **2619**

This outbreak which occurred in cattle in an area of the French Cameroons in which the disease had been previously practically unknown is said to have been introduced by the movement of stock from Nigeria. The disease was first recognized in October 1941, but is thought to have been introduced at least as early as August of that year, and as movements of stock and meat had been continued, it had become widespread before control measures were enforced. The measures of control adopted consisted of the burning or deep burial of all carcasses, and the vaccination of all the cattle in the area with formolized cultures of *Clostridium chauvoei.* In one area, in 1942, 8,729 animals died before vaccination and 3,357 after vaccination. Vaccination is said to give immunity for a year, but it is suggested that it should only be necessary to vaccinate for three years, as exposure to infection should give a more lasting immunity. Deaths appear to have been

few in the last quarter of 1942, and only in one area did they occur in 1943; widespread vaccination was again carried out in 1943.—U. F. RICHARDSON.

SLAVIN, D. (1944). **Granulomatous Lesions in Cattle in Kenya Resembling those of Actinobacillosis.**—*Vet. Rec.* **56.** 25–26. **2620**

S. describes localized granulomatous lesions removed surgically from Friesian cattle (one cow and two bulls) in Kenya. All were from the anterior cervical region, were the size of a grapefruit, had ulcerated externally, and, on section, closely resembled lesions produced by *Actinobacillus lignieresi*. Cultures obtained from the lesions resembled *A. lignieresi*, but differed from normal strains in the absence of fermentative powers and in possessing long life in culture.

Infection was transmitted to three bullocks by inoculation with culture. There was failure to infect small numbers of g. pigs, rabbits, and mice by inoculation with culture. Intradermal tests of the artificially infected cattle when a ten-day-old peptone broth culture extract was injected gave reactions similar to a positive tuberculin reaction. Treatment of two of these animals by potassium iodide until iodism was produced caused complete regression of the growths within two months.

Histological findings in the three natural cases and in the untreated artificially infected animal are detailed.

S. considers the causal organism to be either a distinct species or a variant of *A. lignieresi*.—C. V. W.

CATANEI, A. (1943). Sur les modifications morphologiques des champignons pathogènes. [**Morphological Modifications in Pathogenic Fungi**].—*Arch. Inst. Pasteur Algér.* **21.** 180–185. **2621**

C. presents information reported in his previous articles on morphological modifications of pathogenic fungi grown under variable conditions on selective media. The effects of age of culture, repeated subculture on various media, and subculture from old cultures are detailed with regard to *Ctenomyces mentagrophytes*, *Achorion schönleini*, and *Microsporon canis*, and also of conservation for several months or more, on affected hairs, of *Trichophyton violaceum*, *A. schönleini*, and a *Microsporon*. Fixed subtypes were produced in old cultures of *Nocardia madurae*.

Changes in pathogenic effects of subtypes of *Ct. mentagrophytes*, *Tr. acuminatum*, and *Tr. pruinosum* on hair and skin lesions of g. pigs, and also of *Sabouraudites felineus* (as described by LANGERON & TALICE, in 1930) are summarized as follows:—(1) if normal hair lesions are endothrix in type, subtypes are merely less pathogenic and fewer or no arthrospores are formed; (2) if normal hair growth is ectothrix in type, whether spores are small, medium or large in size, no surface felted growth is produced by subtypes; (3) with "intermediate" types between the normal and white "downlike" types of *Ct. mentagrophytes*, ringworm lesions produced show less effect on the hairs or are similar to those produced by the pleomorphic downy or woolly type.

In all cases culture from modified lesions yielded the inoculated types.

Of ringworm species, the "downy" type appears to be the final degeneration type and lesions produced vary according to the degree of degeneration. Some fungi, however, show increased sporulation and pathogenicity after subculture.

C. suggests that abnormal sustenance may account for variations of types of fungi, particularly of *Ct. mentagrophytes*, in natural cases of ringworm of animals and of madura foot in man.—C. V. WATKINS.

CARNEIRO, A. L. (1942). Dermatófitos Portugueses. [**Dermatophytes of Portugal**].—*Rev. Med. vet., Lisboa.* **37.** 57–76. **2622**

C. lists the dermatophytes identified by him in Portugal and gives the names of the species reported in that country. They include:—*Microsporon audounii*, *M. felineum*, *M. lanosum*, *M. crateriforme*, *M. acuminatum*, *M. violaceum*, *M. album*, *M. rosaceum*, *M. cerebriforme*; *Trichophyton glabrum*, *T. denticulatum*, *T. equinum*, *T. caninum*, *T. granulosum*, *T. viannai*; *Achorion schönleinii*, *A. quinckeanum*; *Favotrichophyton angolense*, *F. salmoneum*; *Epidermophyton inguinale*, *E. nigricans*.

A table showing geographic distribution is given.
—MILLER WATSON.

SPINK, W. W., WRIGHT, L. D., VIVINO, J. J., & SKEGGS, H. R. (1944). **Para-aminobenzoic Acid Production by Staphylococci.**—*J. exp. Med.* **79.** 331–339. **2623**

Strains of staphylococci produce a substance similar in its chemical reactions to, and probably identical with, *p*-aminobenzoic acid. The *p*-aminobenzoic acid estimated colorimetrically is present in higher concentration in strains which are resistant to sulphanilamide. The substance estimated colorimetrically is destroyed by a soil bacillus which is known to oxidize *p*-aminobenzoic acid and is as active as *p*-aminobenzoic acid in neutralizing the bacteriostatic action of sulphathiazole. Microbiological assay of *p*-aminobenzoic acid also indicated that it was present in the staphylococci. Thus, although the acid has not been isolated from the organisms, there is good evidence that it is present in small amounts.—E. BOYLAND.

MCILWAIN, H. (1944). **Biochemical Characterization of the Actions of Chemotherapeutic Agents. 1. Measurement of Growth of Streptococcal Cultures through their Gaseous Metabolism, and the Effects of Pantothenate and Pantoyltaurine upon the Metabolism and Growth.**—*Biochem. J.* **38.** 97–105. **2624**

The growth of *Streptococcus haemolyticus* was followed by means of manometric measurements of the gas evolution under anaerobic conditions in a Warburg apparatus. With low concentrations of pantothenate (below 4×10^{-8} M), the rate of growth was roughly proportional to the pantothenate concentration. Pantoyltaurine reduced the metabolism of resting organisms, but this effect could be neutralized by 1 : 10,000 of the equivalent amount of pantothenate. Pantoyltaurine depressed growth and increased the lag period when a large excess of pantothenate was present.
—E. BOYLAND.

GUELIN, A. (1943). Lyse bactérienne provoquée par une souche de *B. coli*. [**Bacterial Lysis caused by a Strain of** *Bacterium coli*].—*Ann. Inst. Pasteur.* **69.** 382–384. **2625**

Some strains of *Bact. coli* inhibit the growth of other bacteria, and G., working with a strain of *Bact. coli*, found that filtrates of broth cultures caused lysis of another strain of *Bact. coli* and a strain of *B. flexneri*, but that the lysis was specific, as other strains of *Bact. coli* and strains of *Salmonella typhi* and *S. paratyphi* were not affected. The lytic substance was heat resistant and was only active on young cultures within the first six hours of their development. It was not inactivated by bacteriophage antiserum, and although calcium is necessary to the formation of the substance, its presence is not necessary for its activity. It is concluded that the substance is neither a bacteriophage nor a diastase.—U. F. RICHARDSON.

FRICKER, J. (1943). La Notion du polygone de fréquence en bactériologie. [**" Polygone de Fréquence " in Bacteriology**].—*C. R. Soc. Biol. Paris.* **137.** 529–530. 2626

F. propounds the theory that the *polygône de fréquence* familiar to geneticists, may be applied in bacteriology. Twenty different colonies of a pure strain of a streptococcus of human origin were picked from a plate into separate tubes of broth, thus giving 20 cultures varying from the homogeneous to the granular. The most granular and most homogeneous strains were again subcultured, and so on for 20 subcultures. From first to last, a mixed strain resulted, the granular strain predominating. Thus, according to F., selection has no effect on the genotype, a single colony of an organism containing a mixture of types, regardless of the phenotype.

Enumerating the cultures 1–10 depending on their granularity in appearance, and placing these in abscissa, and placing in ordinance the number of tubes having the same appearance, a polygonal graph results characteristic of the pure strain considered.—R. M. LOOSMORE.

See also absts. **2765, 2826** (mastitis), **2665, 2766, 2767, 2786, 2793, 2826** (TB.), **2694** (*Corynebact. pyogenes*), **2818** (swine erysipelas in Nebraska), **2782, 2783** (*Ps. pyocyanea*), **2818** (pullorum disease in New York State), **2692, 2786, 2787, 2817** (brucellosis), **2794** (anaerobic cultivation), **2768-2770** (actinomycosis).

DISEASES CAUSED BY PROTOZOAN PARASITES

DIOS, R. L., & KÜHN, M. (1943). Ensayos de premunición con el Trypanosoma equinum (mal de caderas) en caballos. [**Premunition of Horses against *T. equinum* Infection**].—*Rev. Inst. bact., B. Aires.* **12.** 67–82. [English summary]. 2627

The authors used a strain of *T. equinum* isolated in 1919, maintained by passage in horses for five years, and then preserved by rat passage for 14 years. With this strain they attempted premunition against *mal de caderas* in a horse.

After inoculation the animal showed a slight increase in temperature and a moderate number of trypanosomes was found in the blood. The blood trypanosomes gradually disappeared, but the blood still remained infective to rats and other horses.

The course of the experimental affection was short and no nervous symptoms of *mal de caderas* appeared. At a later date the horse was experimentally infected with fully virulent trypanosomes, and showed a mild fever with only a small number of organisms appearing in the blood. These gradually disappeared and the animal returned to apparently perfect health. The authors hope that by the use of the rat-passaged, or a similar, strain they can produce effective premunition against this disease.—MILLER WATSON.

DIOS, R. L., & DE SOMMERVILLE, E. T. W. (1943). Observaciones realizadas con cepas de Trypanosoma cruzi Chagas, 1909 conservadas sobre ratones blancos. [**Observations on Strains of *T. cruzi* maintained in White Mice**].—*Rev. Inst. bact., B. Aires.* **12.** 37–59. [English summary]. 2628

The authors studied 2,413 mice inoculated intraperitoneally with *T. cruzi* from human blood and from *Triatoma* excreta. Quite a large proportion of the mice (28·8%) showed no subsequent infection, although the inoculated material was rich in trypanosomes. Infected mice lived for as long as 636 days (human blood infection) and 481 days (*Triatoma* excreta) after inoculation and the greater part showed only a moderate infection. There was no notable difference in the number of positive inoculations with the human and arthropod material, in spite of the fact that the *Triatoma* excreta contained many trypanosomes in the metacyclic form.

One strain of trypanosomes of human origin has now been maintained for 18 years, but many strains die out quite rapidly under controlled conditions.—M. W.

*CORRADETTI, A., & BALBONI, A. (1942). Rapporti tra Plasmodium gallinaceum e globulo rosso in relazione con la specie ospite. [**Relations between *P. gallinaceum* and Red Blood Cells with respect to the Species of the Host**].—*Riv. Parassit.* **6.** 225–228. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). 144. 197]. 2629

GIOVANNOLA distinguishes the avian plasmodia according to the nuclear displacement which is caused by schizonts and gametocytes in the erythrocytes. This displacement of the nucleus is now shown to vary also according to the host species involved. Experiments were made on the goose, turkey, and fowl. Figures are given in the original article which represent the percentage numbers microscopically observed in several hundred infected erythrocytes. A table is given in the abstract showing the mean values for each host and each type of parasite. The separate figures in the original are stated to agree well with these averages. The individual variations are not great: only as regards the rosette forms in the goose was agreement not shown.
—C. HORTON SMITH.

*MUDROW, L. (1942). Zur Sporozoitenentwicklung verschiedener Vogelmalariaarten. [**Development of the Sporozoites of Avian Malaria Parasites**].—*Riv. Malariol.* **21.** 382–385. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). 143. 317]. 2630

A brief description of KIKUTH & MUDROW's views on the reticulo-endothelial development of sporozoites as found in *Plasmodium cathemerium*, *P. gallinaceum*, and *P. praecox-relictum*. Examples of some of these developmental stages are discussed.—C. HORTON SMITH.

*CORRADETTI, A. (1942). Dimostrazione dell'esistenza del plasmodium praecox nelle civette (arcine noctua) e rapporti di questo plasmodio con la specie denominato Plasmodium subpraecox. [**Demonstration of *P. praecox* in an Owl (*Arcine noctua*) and Relations of this Plasmodium with *P. subpraecox***].—*Riv. Parassit.* **6.** 177–185. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). 144. 197]. 2631

The wood owl, *A. noctua*, harbours *Plasmodium subpraecox*. The blood of infected birds is infective for other birds of the same species and for canaries. Infection produced in canaries proved to be identical with that produced by *P. praecox*. Cross-immunity in canaries which had passed through a *P. praecox* infection, or through the infection following inoculation of blood from infected wood owls, showed that the parasites agreed in their biological immunity. *P. praecox* thus is involved in the natural wood-owl infections. The probability exists that *P. praecox* and *P. subpraecox* represent a single species.—C. HORTON SMITH.

SILVA LEITÃO, J. L. (1942). A Nuttallia equi em Portugal. [*Babesia equi* **Infection in Portugal**].—*Rev. Med. vet., Lisboa.* 37. 171–179. 2632

The author describes a case of *B. equi* infection in Portugal. The animal was treated, apparently successfully, with acaprin.—MILLER WATSON.

See also absts. **2668, 2669, 2692, 2772** (trypanosomiasis), **2795** (dourine), **2817** (coccidiosis in cattle), **2773** (in rabbits), **2818** (in fowls in Wisconsin), **2795** (equine piroplasmosis), **2817** (treatment of anaplasmosis), **2771** (aromatic diamidines in protozoal infections).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

SCHMIDT, S., & HANSEN, A. (1944). Fem Aars Produktion af Vaccine mod Mund- og Klovesyge. **[Five Years' Production of Foot and Mouth Disease Vaccine].**—*Maanedsskr. Dyrlaeger.* 56. 73–90. 2633

F. & M. disease vaccine for use on cattle in the field was first prepared in Denmark in November, 1938. A report on the vaccine used up to the end of 1940 has already been published [*V. B.* 12. 444.]: this paper covers the period 1941 to the end of 1943, but also contains some data for the whole five-year period.

The vaccine laboratory and the machinery are first described, also the alterations which were made as experience was gained. The vaccine production figures are given. The vaccine was not produced steadily over the whole period, but in four main "campaigns". During the first period up to March 1941, about 71·7 kg. of O type virus and slightly more of A virus were produced, serving to make 10,601 kg. of prepared divalent vaccine. Thereafter, monovalent vaccine only was prepared. In the second period covering one month at the end of 1941, 1,415·86 kg. of O virus vaccine and 979 kg. of A virus vaccine were produced. During the third period (January-March 1942), 5,087·9 kg. of O virus vaccine and 5,717 kg. of A type virus vaccine were prepared, and during the final period in October 1943 1,072 kg. of O type and 1,142·5 kg. of A type vaccine were made, the total amount of vaccine of all types being 26,016 kg.

Every batch of vaccine was tested as a routine measure before issue and all passed except seven consecutive lots which failed to confer the requisite immunity. The cause of this could not be traced and was ascribed to a peculiar property of the virus used. This problem is discussed at some length.

A graph illustrates the amounts of vaccine issued during the three-year period 1941–43. The major part was issued direct on request to veterinary practitioners, a relatively small part was used by the Veterinary Directorate for zone immunization purposes, and a still smaller amount was exported. A cold store held at 2°C. was used for the virus which was contained in large cans resembling English milk transport cans. Tests on stability showed that the vaccine kept well for one year, though several batches were still potent after two years.—J. E.

RUBINO, M. C. (1943). Sobre la actual epizootia de fiebre aftosa. Informe preliminar e informe complementario del Director de la Sección del Laboratorio de Biologia Animal de la Dirección de Ganadería. **[The Present Outbreak of Foot and Mouth Disease. Report of the Director of the Laboratory of Animal Biology, Division of Livestock, Uruguay].**—*Bol. mens. Direcc. Ganad., Montevideo.* 27. 413–426. 2634

This is an account of a serious outbreak of F. & M. disease in Uruguay during 1943. It was characterized by extreme malignancy and caused many more deaths than is usual in South America. The measures taken to combat the outbreak are described. R. calls for the establishment of an institute for the preparation on a large scale of sera and vaccines to combat the disease.
—MILLER WATSON.

HIRT, G. (1942). Infektions- und Immunisierungsversuche mit dem Virus der Aujeszkyschen Krankheit. **[Infection and Immunization Experiments with Aujeszky's Disease Virus].**—*Arch. wiss. prakt. Tierheilk.* 78. 186–190. 2635

Pigs inoculated subdurally with virulent swine-brain emulsion almost always succumb to infection with Aujeszky's disease; death follows 1–2 days after symptoms appear, the incubation period lasting 3–6 days, with a sudden rise and fall of temperature occurring 12–24 hours before the onset of symptoms.

Attempts to confer passive immunity on pigs were unsuccessful: two pigs inoculated subdurally as before, and given at the same time 50 ml. of immune serum, subcutaneously or intravenously, died on the seventh and eighth days respectively. Active immunity, however, was found to follow recovery from natural infection, and to be conferred by repeated subcutaneous inoculation with virulent rabbit-brain emulsion.—E. C.

HIRT, G. (1942). Bei der Aujeszkyschen Krankheit ist der Virusgehalt des Zentralnervensystems durch die Infektionsstelle bedingt. **[The Virus Content of the Central Nervous System in Aujeszky's Disease is Influenced by the Site of Infection].**—*Arch. wiss. prakt. Tierheilk.* 78. 191–194. 2636

Serial passage of infective brain suspension subdurally in pigs did not cause any material alteration in the length of the incubation period or in the duration of clinical symptoms. In rabbits, serial subdural passage of infective brain was positive for at least 50 transfers, and passage of lumbar cord into the femoral muscles was positive for at least 40 transfers; serial passage, however, of brain into the femoral muscles was negative after 2 or 3 transfers. A further experiment in rabbits showed that after inoculation of virulent material into the shoulder muscles, the virus was present in the cervical cord in 100% of the experimental animals, in the brain in 40%, and in the lumbar cord in 20%.—E. COTCHIN.

BÉQUIGNON, R., & VIALA, C. (1943). Les vaccinations antirabiques à l'Institut Pasteur en 1942. **[Vaccination against Rabies at the Pasteur Institute, Paris, in 1942].**—*Ann. Inst. Pasteur.* 69. 372–374. 2637

In 1942, 435 persons presented themselves at the antirabies service, and 149 were treated. The attacking animals included dogs, cats, and rats, but in only one case was the presence of rabies based on a "veterinary examination", and in only four out of 38 histological examinations of the nervous system was any confirmation of rabies obtained. In these four animals, a cellular infiltration of the plexiform ganglia "identical with that of the first stage of rabies" was encountered. No deaths and no paralytic symptoms occurred in any of the vaccinated persons.—U. F. RICHARDSON.

FERREIRA, A. J. (1941). Aspectos importantes da vacinação antirábica dos cães. **[Important Aspects of Antirabies Vaccination of Dogs].**—*Rev. Med. vet., Lisboa.* 36. 1–24. 2638

A comprehensive discussion of the problems of antirabies vaccination of dogs. Among other aspects, F. discusses the relative value of "killed" vaccines and attenuated vaccines. In his opinion, many of the so-called "dead" vaccines are in reality only attenuated; this would account for their antigenic value. He deals with post-vaccination accidents and apparent failures, but points out that since rabies still occurs in Portugal, apparent failures may be due to animals being vaccinated when they are actually in the incubation period of the disease.—MILLER WATSON.

KUBES, V., & GALLIA, F. (1944). **Brain-Tissue Neutralization. A New Biological Reaction for Rabies Virus. Its Relation to the Protection and Serum-Neutralization Tests.**—*Canad. J. comp. Med.* 8. 48–60. 2639

The investigations were made in order to test *in vitro* the neutralizing power for rabies virus of brain tissue of mice treated with antirabies vaccine. To

appreciate the value of the brain tissue neutralization test, protection and serum neutralization tests were performed simultaneously.

It is concluded that such brain tissue does contain neutralizing antibodies. The antibody content revealed *in vitro* varied proportionately with the strength of *in vivo* immunity. The brain tissue neutralization test was found to be an accurate image of the existing immunity and results of the test agreed with those of the *in vivo* protection tests. The serum neutralization test was, however, not as accurate, nor did it distinguish between two heterologous strains of virus. The results seem to indicate the presence of two kinds of antibodies, *viz*, cellular (cerebral) and seric or humoral immunity. The cellular antibodies appear to be the more specific factors of immunity. The antibody titre in the brain tissue of mice could be increased by injecting the vaccine intracerebrally. This fact was believed to be new evidence for the actual existence of tissue antibodies independent of serum antibodies.

The number of M.L.D. of virus neutralized *in vitro* by brain tissue was constantly lower than the number of M.L.D. neutralized by immune serum.

It is believed that the brain tissue neutralization test is a laboratory method of practical use for the evaluation of the antigenic power of antirabies vaccine as well as for the immunological differentiation of heterologous rabies viruses.—P. J. G. PLUMMER.

FERREIRA, J. (1942). Subsídio para o estudo etiológico das paralisias consecutivas à vacinação antirábica dos cães. **[Considerations on the Aetiology of Paralysis following Antirabies Vaccination of Dogs].**—*Rev. Med. vet., Lisboa.* 37. 143–151. 2640

F. discusses factors which may be the cause of the paralysis that sometimes develops in dogs vaccinated against rabies, *viz*, the action of fixed rabies virus, a latent neurotropic virus in the tissues of the donor animal or of the recipient, a neurotoxin of nervous tissue, anaphylaxis, or enzyme by-products. He inoculated 30 dogs subcutaneously with different formolized and phenolized rabies vaccines and with fixed virus from horses and rabbits and gives the results, which did not yield any significant information.—MILLER WATSON.

VEERARAGHAVAN, N. (1941). **Elimination of Excess Nerve Tissue from Antirabic Vaccine.**—*Indian J. med. Res.* 29. 303–310. 2641

Experiments were made to ascertain whether water-clear suspensions of fixed virus in sheep brain, prepared by isoelectric precipitation of 10 or 20% suspensions, were satisfactory immunizing agents as compared with phenol vaccines containing a large amount of nerve tissue. The tests demonstrated that the clear vaccine was non-toxic, had approximately the same immunizing value as vaccine-virus from brain suspensions of infected sheep, and that local reactions such as were caused by the phenol vaccines were absent. The nerve tissue removed by isoelectric precipitation has relatively little or no immunizing value.—D. A. MUNRO.

*RAMON, G., BÉNARD, H., BOQUET, P., & RICHOU, R. (1942). Existence chez le cheval d'anticorps d'origine naturelle, possédant des propriétés anti-infectieuses à l'égard du virus de la vaccine. **[Existence in the Horse of a Natural Immunity to Vaccinia].**—*C. R. Soc. Biol. Paris.* 136. 450–451. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* 144. 163.] 2642

Naturally occurring antibodies, conferring immunity against vaccinia virus, were found in horse serum. The authors believe this occurrence to be related to previous infection with horse pox, showing the close relationship between the viruses of horse pox and vaccinia.—T. E. GIBSON.

THORNING, W. M., GRAHAM, R., & LEVINE, N. D. (1943). **Studies on Certain Filtrable Viruses. IV. Immunogenic Properties of Fowl Pox Virus Prepared from the Entire Embryo.**—*Poult. Sci.* 22. 287–290. [For previous parts, see *V. B.* 10. 930]. 2643

THORNING, W. M., GRAHAM, R., & LEVINE, N. D. (1943). **Studies on Certain Filtrable Viruses. V. The Immunogenic Properties of the Entire Chick Embryo Inoculated with Fowl-Pox Virus.**—*Amer. J. vet. Res.* 4. 250–253. 2644

IV. The high concentration of fowl-pox virus in the chorio-allantois of the inoculated developing chick embryo has been widely recognized, while the distribution of virus in other parts of the embryo has attracted little attention.

Virus was inoculated on to the chorio-allantoic membranes of embryos of 10–12 days' incubation by a modification of the Burnet technique and, after five days' further incubation, those embryos showing gross lesions were harvested and from each the chorio-allantois, yolk, and embryo proper were pooled separately. The separate pools were made into suspensions and inoculated by the stick method on to the unfeathered parts of the pectoral regions of chickens.

The greatest concentration of virus was noted in the chorio-allantois, a lower concentration in the yolk, and a still lower concentration in the embryo proper. 89·76% of birds were protected against fowl-pox virus by inoculation with entire embryo.

V. This paper records further observations on the immunogenic properties of the entire chick embryo resulting from the inoculation of the chorio-allantoic membrane with fowl-pox virus.

A 1 : 100 tryptone broth suspension of fowl-pox virus was inoculated on to the chorio-allantoic membranes of a number of developing chick embryos 10–12 days old, by a modification of the Burnet technique, and in each case in which typical lesions were observed, after a further five days of incubation at 37°C., the entire embryo was harvested aseptically, homogenized, and desiccated *in vacuo*.

Titrations of virus diluted with tryptone broth from 1 : 100 to 1 : 20,000 were carried out on four-week-old susceptible chickens when a high percentage of "takes" was observed. The inoculated birds and a number of controls were then artificially infected with chorio-allantoic virus with good protective results.

It is pointed out in conclusion that there is no evidence to show that the virus multiplies in parts of the embryo other than the allantois and that the immunogenic activity of the entire embryo is probably no more powerful than that of the chorio-allantois alone. Good results were obtained from a field trial carried out upon 35 flocks.—J. C. BUXTON.

FRANCIS, T., PEARSON, H. E., SALK, J. E., & BROWN, P. N. (1944). **Immunity in Human Subjects Artificially Infected with Influenza Virus, Type B.**—*Amer. J. publ. Hlth.* 34. 317–334. 2645

Influenza B virus in the form of egg-passage material was nebulized so as to form a fine, dry mist. The spray was inspired by human patients through one nostril for 2½ min. Sixty individuals cohabiting in one ward were divided into two equal batches, one of which was given this treatment, the other serving as a control group. In 27 of the treated patients, a mild, influenza-like illness developed, followed by rises in serum antibodies. Of the 30 in-contact controls, a significant increase in serum antibodies developed in 11.

Four months later, 24 of the treated individuals were subjected to the same process: as a result 21 developed mild symptoms although the second response was, in the main, less severe than the first. It is suggested

that if prophylactic measures were to be completely effective, they would have to be repeated at intervals of less than four months.—R. E. GLOVER.

FRANCIS, T., JR., PEARSON, H. E., SULLIVAN, E. R., & BROWN, P. M. (1943). **The Effect of Subcutaneous Vaccination with Influenza Virus upon the Virus-Inactivating Capacity of Nasal Secretions.**—*Amer. J. Hyg.* 37. 294–300. 2646

It is known that subcutaneous vaccination with active or inactive influenza virus stimulates the production of circulating antibodies in human subjects. It has also been shown that the nasal secretions of certain persons will inactivate influenza virus, and that this property varies with the age of the individual and is increased or acquired following infection. The authors have found that when subcutaneous vaccination with influenza virus causes a significant rise in the titre of neutralizing antibodies in the blood, the power of the nasal secretions to neutralize the virus is also increased. It is considered that it is this ability to increase the inactivating capacity of the nasal secretions, rather than the amount of circulating antibodies, which decides whether a particular influenza vaccine will prevent natural infection or not. Thus one vaccine, although giving rise to circulating antibodies in man, failed to immunize mice. The authors point out that the capacity to immunize mice can be adequately measured, and it may be a more satisfactory method of measuring the potency of a vaccine than antibody formation.—D. L. HUGHES.

PARKER, E. R., DUNHAM, W. B., & MACNEAL, W. J. (1944). **Resistance of the Melbourne Strain of Influenza Virus to Desiccation.**—*J. Lab. clin. Med.* 29. 37–42. 2647

The authors studied the resistance of the Melbourne strain of influenza A virus to various methods of desiccation. The methods used included drying in a current of air, admixture with talc, and drying in air after mixing with gastric mucin. Survival of the virus was measured by its ability to kill embryonated eggs.

The resistance to desiccation appears to be related to the potency of the virus. A virus of low potency was inactive a short time after drying, whereas a virus of high potency was found to be lethal to eggs after many days. Highly potent virus mixed with mucin was alive after 45 days' desiccation. The conclusion is drawn that epidemic and pandemic influenza viruses may be transmitted by dust and dry fomites.—D. L. HUGHES.

BRION, A. (1943). Encefalo-mielitis infecciosa del caballo. [**Equine Encephalomyelitis**].—*Rev. Med. vet., B. Aires.* 25. 526–537. 2648

This is a review of present knowledge of the subject.—MILLER WATSON.

KAPUR, H. R. (1941). **Experiments on the Transmission of Rinderpest Through the Agency of *Tabanus orientis*, With Remarks on the Feeding Habits of this Fly.**—*Indian J. vet. Sci.* 11. 84–93. 2649

In one experiment extending over 21 days, 821 wild *T. orientis* flies, after partial feeding on infected bulls, did not transmit rinderpest when allowed to complete their feed on a healthy animal. In another experiment, however, 54 bites within three days by flies so fed set up the infection. K. observed that, since in nature this fly is an uninterrupted feeder, it is unlikely to be an agent in spreading rinderpest. [It is recognized that horses and cattle often brush off biting flies before the flies have completed a feed; K.'s conclusion is therefore arbitrary.] Rinderpest virus was viable up to 30 hours in flies.—J. A. IDNANI.

SANDERS, E. F., & QUIN, A. H. (1943). **Crystal Violet Vaccine in the Prevention of Hog Cholera.**—*Vet. Med.* 38. 415–418. 2650

The potency of swine fever crystal-violet vaccine was tested on three groups of 12 pigs. Seven of the pigs in each group were given 5 ml. of the vaccine, two received 3 ml., and the remaining three were left as controls. Three weeks after vaccination all the pigs were given 2 ml. of virulent virus and, only one out of nine control pigs failed to show evidence of the disease. All pigs which had received 5 ml. or 3 ml. of the vaccine survived. The limitations and advantages of this method of vaccination are discussed.—J. C. BUXTON.

HADDOW, J. R. (1941). **Ranikhet Disease: The Present Position.**—*Indian Fmg.* 2. 345–350. 2651

A review article, dealing with differential diagnosis and giving recent information on all aspects of Newcastle disease. Within a few years of its discovery in England, in 1926, the disease was reported from several countries under different names. No known method of prophylaxis or of treatment applicable under field conditions was available when this article was written, but attention is called to promising vaccination results reported by DOBSON & IYER [*V. B.* 11. 604]. —J. A. IDNANI.

HADDOW, J. R., & IDNANI, J. A. (1941). **A Preliminary Report on a Method of Vaccination Against Ranikhet Disease.**—*Indian J. vet. Sci.* 11. 113–121. 2652

Tissue-virus suspensions of Newcastle disease adsorbed on aluminium hydroxide gel were treated with dilute formalin and then matured at different temperatures. The results on the whole were not uniform, but a high proportion of birds vaccinated with the product matured at 37°C. for 24 hours resisted an infective inoculation. The vaccine provoked no manifest reaction and birds undergoing immunization were not infective.—J. A. IDNANI.

COLES, J. D. W. A. (1943). **A Review of Psittacosis in Domestic Birds with a Note on a Case of Conjunctivitis in a Pigeon Probably due to Psittacosis.**—*J. S. Afr. vet. med. Ass.* 14. 47–58. 2653

A review of the relevant literature is given, reference being made to cases of human psittacosis in the U.S.A. which were traced to contact with infected pigeons, doves, and domestic fowls. It is suggested that the possibility should always be borne in mind that human cases of atypical pneumonia may be cases of psittacosis. The disease is obviously widespread in pigeons in which it may be associated with salmonellosis. C. examined a case of conjunctivitis in a pigeon from a military loft. Smears from the affected left eye showed colonies of virus particles indistinguishable from Lillie-Coles-Levinthal bodies. All the colonies were located in macrophages and no epithelial cells were invaded, thus precluding diseases of the trachoma or inclusion blenorrhea type. The bird was destroyed before any transmission experiments could be made.—E. M. R.

SMITH, M. G. (1943). **Placental Transmission of Immunity to St. Louis Encephalitis Virus Inoculated Intraperitoneally in Mice.**—*Proc. Soc. exp. Biol., N.Y.* 52. 83–85. 2654

It is shown that young mice born of mothers immunized by the subcutaneous inoculation of active St Louis encephalitis virus are comparatively resistant to intraperitoneal, but not to intracerebral, inoculation of the virus.—J. C. BUXTON.

I. *TISELIUS, A., & GARD, S. (1942). Übermikroskopische Beobachtungen an Poliomyelitis-Virus-präparaten. [**Ultramicroscopic Examination of Poliomyelitis Virus Preparations**].—*Naturwissenschaften.* pp. 728–731. 2655

II. *Gard, S. (1943). Übermikroskopische Beobachtungen an gereinigten Poliomyelitisvirus-präparaten. II. Ein Beitrag zur Frage der Epidemiologie der Kinderlähmung. [**Ultramicroscopic Examination of Poliomyelitis Virus Preparations. II. Epidemiology**].—*Klin. Wschr.* pp. 315–318. 2656
[Absts. from absts. in *Zbl. Bakt. I.* (*Ref.*). 144. 158–159.]

I. These authors have previously (1941) described the appearance of highly purified poliomyelitis virus obtained from mice. Other strains of virus have now been studied and thread-like bodies were observed in all preparations.

II. Poliomyelitis viruses isolated from mice and human beings showed similar thread-like forms when examined with the ultramicroscope. These observations suggest that "neurovirus" of human and mouse strains may be related.—John Francis.

Canham, A. S. (1943). **A Rickettsia-like Organism found in the Blood of Pigeons.**—*J. S. Afr. vet. med. Ass.* **14.** 83–89. 2657

After giving a brief review of some of the more recent publications on psittacosis, C. describes inclusion bodies observed in pigeon monocytes which resembled those of the psittacosis virus. Their staining reactions, however, were different and their size was very much more regular, varying from 0·2–0·8μ, and they were coccoid. They were mainly found in clumps of 20 up to a few hundred. When stained by Giemsa's method, the clumps showed a pinkish lilac colour while the individual organisms were bluish. They were Gram-negative but not acid-fast. All attempts at transmission, and to determine the vector, failed. No symptoms were noted as a result of the infection.—E. M. Robinson.

*Bernoulli, R. (1943). Ein Beitrag zur Filtration von Bakteriophagen durch Seitz-Filter. [**Filtration of Bacteriophage Through Seitz Filters**].—*Arch. Virusforsch.* **2.** 533–538. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). 144. 335]. 2658

The staphylococcus phage SKL/P is more or less inactivated by filtration through a Seitz EK filter, due to adsorption of the bacteriophage particles. This characteristic adsorption does not occur with other bacteriophages. Filtration through Jena glass filters and Chamberland candles L3 and L5 has no effect on the lytic titre. This indicates that the bacteriophage exists in states with different physical and structural, as well as biological, properties. The adsorption may be due to the molecular structure of the bacteriophage particles, or it may be due to the electric charge. The bacteriophage can be extracted from the filter by broth; this does not appear to be a simple washing-out process, because distilled water does not have this effect. The Seitz filter is thus not suitable for the filtration of types of bacteriophage-containing materials, but may be useful in the isolation of new types of bacteriophage. There was no evidence of any oligodynamic influence of silver, nickel, copper, or zinc ions on the bacteriophage studied.—O. Cruse.

See also absts. **2815** (F. & M. disease in B. Guiana), **2817** (vesicular stomatitis), **2814**, **2821** (rabies), **2642** (vaccinia), **2795** (E.E.), **2817** (S. F. vaccine), **2818** ("bluecomb disease" in New Hampshire) **2696–2699**, **2701** (infective hepatitis), **2625** (bacteriophage).

IMMUNITY

Bender, M. B. (1943). **The Reaction of the Smooth Muscle of the Denervated Iris in Anaphylaxis. A Comparative Study in the Guinea-Pig, Rabbit, Dog, Cat and Monkey.**—*J. Immunol.* **47.** 483–491. 2659

The meiotic response following anaphylactic and sometimes anaphylactoid reactions was studied experimentally. Evidence is brought forward showing its independence from the nervous system. B. suggests that this meiotic effect may be due to the liberation of a substance which is very probably not histamine nor acetylcholine.—M. L. Levi.

Morris, M. C. (1944). **Analogy Between the Effect of Complement on Sensitized E. Typhosa and the Effect of Tissue Individuality on Sensitized Virus.**—*J. Immunol.* **48.** 17–24. 2660

An attempt is made to show that the infectivity of a mixture of *Salmonella typhi* and antibody is due, not to the presence of unaltered organisms, but to organisms which, owing to their exposure to antiserum, are no longer normal, since mixtures of suspensions of *S. typhi* and its specific antibody may grow in one preparation of complement, but not in another, and sensitized *S. typhi* may grow at a slower rate in complement than even very small amounts of unsensitized organism.
—J. C. Buxton.

Burger, M. (1944). **Microscopic Observation of Collodion Particle Agglutination in Protein-Antiprotein Systems.**—*J. Lab. clin. Med.* **29.** 352–356. 2661

The microscopic collodion particle agglutination technique [*V. B.* **11.** 380.] was compared with the ordinary precipitation test and with the macroscopic collodion particle agglin. test as a means of detecting the presence of specific antibody in antiprotein sera. The antisera were prepared in rabbits by the intra-abdominal injection of the antigens, seven protein-antiprotein systems being studied, *viz*, egg-white anti-egg-white, sheep-antisheep, pig-antipig, bovine-antibovine, horse-antihorse, chicken-antichicken, human-antihuman. The macroscopic collodion particle test was found to be 2–10 times more sensitive than the ordinary precipitation test, while the microscopic collodion particle test was 2–10 times more sensitive than the macroscopic.—J. Lochiel McGirr.

Schütze, H. (1943). **Extracts of *Bact. shigae* as Immunising Agents in the Mouse.**—*J. Path. Bact.* **55.** 457–464. 2662

By the use of diethylene glycol and phenol extracts of *Bacterium shigae*, varying degrees of immunity to a test dose of approximately 5 M.L.D. of live *Bact. shigae* culture were produced in mice. This immunity was enhanced by increasing to six weeks the interval between the two immunizing doses used, when the bacterial immunizing extract and the organisms of the test doses were of the same strain. On a second occasion, when different strains were used for immunization and for the test dose, a greater percentage survival was obtained where the interval between the two immunizing doses was two weeks instead of six.

In another experiment, where two different strains of mice were used, better agglutinin titres were obtained where the interval between the two immunizing doses was six weeks than where the interval was two weeks. In all cases females produced higher titres than the males and also showed a better percentage immunity to test doses. Also the "M" strain of mice showed higher agglutinin titres and better immunity than the "T" strain. The survival rates corresponded in this experiment with the agglutination results, except that the "M" strain of mice showed relatively little sex difference in respect to their percentage survivals, although their sex difference in agglutinin production was marked.

The effect of preservative on the antigenicity of the immunizing extracts was investigated. It was found that the addition of 0·1% formalin or 1 : 10,000 merthiolate to the phenol extract, with a delay of three months before using it, did not affect the antigenicity of the extract, as shown by the immunity which it produced in mice. The addition of 0·5% phenol to the extract seemed to lower the antigenic potency. Agglutinin titres in this experiment did not parallel the survival rates. Large doses of formolized vaccine induced a fair degree of immunity, giving a 54% survival to the test dose, but they did not produce agglutinins. Thus the agglutinin titre need not necessarily be a guide to the degree of immunity produced.—R. COOMBS.

NEURATH, H., GREENSTEIN, J. P., PUTNAM, F. W., & ERICKSON, J. O. (1944). **The Chemistry of Protein Denaturation.**—*Chem. Rev.* **34.** 157–265. **2663**

The widespread, if not universal, importance of protein denaturation phenomena in relation to the fundamental aspects of practically all biological, physiological, pathological, and immunological problems renders a review of this type invaluable to the research worker in many fields, particularly when, as in this case, information from a vast, scattered, and complicated literature is well and critically collated, correlated, and evaluated. Earlier sections survey fundamental aspects of the problem, including the qualitative chemical and biological differences between native and denatured proteins, and the nature of denaturing agents, while later sections discuss the chemical nature of the denaturation process.

Section I, which is introductory, deals with the adequate definition of the terms "denaturation", and discusses qualitative differences between native and denatured proteins, degrees of denaturation, and denaturing agents. Section II, which contains numerous subheadings, represents a critical review of published data relating to chemical changes occurring in proteins during or due to denaturation, and gives a detailed account of available information on the kinetics and thermodynamics of the process. Section III deals with the properties of denatured proteins and reviews the literature regarding changes in molecular weight, molecular shape, electrochemical properties, structure, and immunological specificity due to denaturation, while section IV discusses the problem of whether or not denaturation is to be regarded as a reversible process.

The section on immunological specificity and on the use of chemical denaturing agents to destroy the power to elicit antibody production, while leaving specificity and capacity to combine with antisera unaffected, is of very direct importance to all interested in immunological problems, representing, as it does, one aspect of the impact of modern and physiochemical methods on the important field of immunological disease diagnosis and control.

The review contains 418 references.—J. L. McG.

WRIGHT, G. G. (1944). **Studies on the Denaturation of Antibody. I. The Action of Urea on Diphtheria Antitoxin.**—*J. exp. Med.* **79.** 455–461. **2664**

This investigation into the action of urea on diphtheria antitoxin was undertaken in an attempt to gain information relating to the theory of antibody structure. The antitoxic globulin solution used (a commercial preparation) contained 20% protein and had a potency of 3,000 units of antitoxin per ml. The following reaction mixtures were investigated:– (a) antitoxin diluted 1 : 20 in a series of phosphate-buffered urea solutions of molar concentrations between 0 and 7·6, (b) a similar series to (a) with 0·1 M sodium sulphite added to each solution, and (c) a series at pH's between 4 and 10. The solutions were left at room temperature for 48 hours, dialysed against saline, and assayed for antitoxin by the Römer intracutaneous method and the Ramon flocculation test. A further series in which samples were removed at varying time intervals was also tested.

The results indicated that the antitoxin was definitely inactivated by the urea. In 7·5 M urea at pH 7·82, antitoxic activity was halved in 24 hours, an effect which was markedly increased by the presence of 0·1 M sulphite [disulphite linkages revealed by the urea denaturation are reduced to sulphydryl by the sulphite] and by pH's on both the acid and alkaline sides of neutrality. These results are discussed in the light of PAULING's theory of antibody structure [*V. B.* **12.** 30.] and in relation to recent information on urea denaturation of proteins [see preceding abst.].

—J. LOCHIEL McGIRR.

SEIBERT, F. B. (1944). **The Chemistry of Tuberculin.**—*Chem. Rev.* **34.** 107–127. **2665**

This short review is chiefly concerned with recently acquired information concerning the composition, physico-chemical characteristics, and biological properties of the specific constituents of human type tuberculin. Sections 1 and 2 deal respectively with tuberculin polysaccharide and nucleic acid, and contain no new information. In discussing the question of whether or not polysaccharide plays any part in eliciting the skin reaction, S., basing her conclusions largely on the work of McCARTER & WATSON [*V. B.* **12.** 589.] considers it probable "that the polysaccharide *per se* is not responsible for a significant specific local skin reaction".

Section 3, the major portion of the article, is concerned with the proteins of tuberculin. In it an attempt is made to systematize information derived from electrophoretic, ultracentrifugal, and diffusion studies of both raw (unheated) and heated tuberculins, the majority of the preparations used being derived from cultures on Long's synthetic medium. A certain amount, however, of the data quoted has not hitherto been published, and detailed information regarding its origin and mode of preparation is lacking.

The following represents a summary of the protein classification adopted. (1) Undenatured [native ?] proteins, soluble at all pH's: the two representatives of this group which have been studied are labelled A and B. (2) Denatured proteins insoluble at their isoelectric points: the two representatives of this group which have been studied are considered to be denatured forms of A and B, and are labelled A^1 and B^1 [B^1 corresponds to the fraction labelled B in a recent paper by SEIBERT & NELSON—*V. B.* **13.** 383]. Proteins B and A^1 have only recently been recognized and their properties have not been fully investigated. A is coagulated by heat and has a molec. wt. of 32,000, while B^1 is not coagulated by heat, has a molec. wt. of 16,000, and is much more elongated (? uncoiled) than A. (3) A series of denatured proteins labelled group D: these are thought to represent extensively denatured proteins which have been formed by polymerization of small degraded protein units. Included in this group is a recently isolated fraction labelled Q (E): this is electrophoretically homogeneous, but extremely inhomogeneous in sedimentation and diffusion. (4) A series of proteins which apparently exist in combination with nucleic acid, labelled group C: some, at any rate, of this series may represent true nucleoproteins. Throughout the article no indications are given of the proportions in which these different groups of proteins occur: it is merely stated that a higher proportion of the undenatured forms occurs in unheated tuberculin and that heating leads to the formation of denatured forms; the quantities

of the C and D forms present are apparently variable and determined by as yet unknown factors. Attempts to demonstrate a change from the A to the B type protein in the laboratory have so far proved unsuccessful.

In relation to biological properties, A protein, which is more antigenic than B^1, is also more active in eliciting the intradermal tuberculin reaction, a further difference being the fact that in man the intracutaneous reaction with A reaches its maximum at the 24th hour, while that with B^1 does not attain a maximum till the 48th hour. In general, S. declares that, in man when the smaller dosage (0·02μg.) is used, preparations containing a high proportion of denatured proteins are invariably less potent than those containing more of the A type (undenatured) protein. On the other hand, she also states that these differences are less marked and even reversed when larger doses (5μg.) are used. A and B^1 proteins also exhibit a certain amount of immunological specificity: antibody to B^1 protein, produced by repeated injection into rabbits, occurs in the α_1 fraction of the serum, while that to A protein occurs in a fraction intermediate in mobility between the β and γ globulin fractions. [This represents a revision of previous data in which B^1 was said to produce antibody in the albumin fraction, and A antibody in the γ globulin fraction—see *V. B.* **13.** 383.]—J. Lochiel McGirr.

See also absts. **2611** (Koch's phenomenon), **2608** (TB. immunization), **2643**, **2644** (fowl-pox immunization), **2654** (St. Louis encephalitis immunity), **2609** (speed of reaction hypothesis).

PARASITES IN RELATION TO DISEASE [GENERAL]

Nagaty, H. F. (1942). **On Some Parasites Collected in Egypt from Food Mammals.**—*J. Egypt. med. Ass.* **25.** 110–111. **2666**

N. examined and identified the parasites collected over a period of several years from food animals slaughtered in the Cairo abattoir. He gives a list of the parasites collected from one-humped camels, cattle, buffaloes, and sheep, and adds notes indicating those parasites which were found only in imported animals. —T. E. Gibson.

Pozo, D. G., & Schärzinger, J. C. M. (1941). Contribución al estudio del parasitismo del gato doméstico en Granada, producido por gusanos intestinales. **[Intestinal Parasites of Cats in Granada].**—*Rev. ib. Parasit., Granada.* **1.** 314–319. **2667**

The authors made P.M. intestinal examinations of 77 cats. They found that 53 (68·8%) had intestinal parasites. Of these, 19 had only cestodes, 9 had only nematodes, and 25 had mixed cestode-nematode infestation. Most of the worms were *Dipylidium caninum* and *Toxascaris leonina.*—Miller Watson.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Fiasson, R. (1943). Contribution à l'étude des arthropodes vulnérants du Moyen-Congo. **[The Biting Arthropods of the Middle Congo].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **2.** 257–282. **2668**

A list is given of biting arthropods collected in the Middle Congo area. The arthropods dealt with include ticks, mites, lice, fleas, flies, and midges. Amongst the ticks, *Rhipicephalus appendiculatus* was collected at Brazzaville and Gabon, and *Boophilus decoloratus* from several areas. Amongst tsetse flies, *Glossina palpalis* and *G. fusca* are recorded, the former showing infection with a trypanosome, thought to be *T. vivax*, though it is noted that goats and sheep thrive in areas infested with the fly. Attempts to transmit *T. congolense* experimentally by transmission through *G. palpalis* were unsuccessful.—U. F. Richardson.

Vaucel. (1943). Glossines du Cameroun Français. **[Species of *Glossina* Found in the French Cameroons].**—*Rev. Sci. méd. pharm. vét., Brazzaville.* **2.** 97–100. **2669**

In addition to the species of tsetse fly recognized as occurring in the French Cameroons up to 1939, the following species have now also been identified:—*G. haningtoni*, *G. fusca* var. *congolensis* and *G. palpalis* subsp. *fuscipes*. Whilst in the French Cameroons the males of *G. haningtoni* and *G. tabaniformis* answer to the classical description, the signum of the uterus of the females differs in respect of its chitinization from that described for the type specimens.—U. F. Richardson.

See also absts. **2777** (fly control), **2817** (warble control), **2818** (hornfly control in Puerto Rico), **2649** (vector of rinderpest).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

*Bugge, G. (1943). Der Muskelegel Dunckers beim Dachs. [*Agamodistomum suis* **Infestation in Badgers].**—*Z. Fleisch- u. Milchhyg.* **53.** 101–102. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 136]. **2670**

In the muscles and fat of two badgers obtained from Mecklenburg, larval trematodes were found which were similar in structure and state of development to *Agamodistomum suis* [*V. B.* **12.** 594.], which B. had found in large numbers in wild boars. In the badger these flukes accumulate in the abdominal cavity and migrate singly into the organs of the thoracic and abdominal cavities, as well as to the adjoining muscles. In fat tissue the cyst can be recognized by its sharply defined dark outline, and in muscle by its glistening appearance. The typical cysts were observed by microscopic examination in the musculature of the badgers, and free flukes were also seen.—T. E. Gibson.

*Koffman, M. (1943). [*Pseudamphistomum truncatum* **Infestation of the Liver of a Fox].**—*Skand. VetTidskr.* **33.** 161–168. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 137]. **2671**

This parasite produces tumour-like liver lesions, the histology of which is described. It requires two intermediate hosts, a water snail and a freshwater fish. The final host is infected by ingestion of fish containing the metacercariae. Development takes place in the bile ducts.—T. E. Gibson.

Cameron, T. W. M. (1944). **The Morphology, Taxonomy, and Life History of *Metorchis conjunctus* (Cobbold, 1860).**—*Canad. J. Res.* Sect. D. **22.** 6–16. **2672**

In C.'s opinion, the North American species of the liver fluke of carnivores is synonymous with the original specimen described from a red fox in the London Zoo, and the correct nomenclature is *Metorchis conjunctus* (Cobbold, 1860). The common sucker (*Catostomus commersonii*) has been shown to be the second intermediate host in Canada. Snails (*Amnicola limosa*

porata) collected in Lake Edward, P. Q., shed cercariae which gave rise to metacercariae in suckers, and an experimental infestation in a cat was established. Stages in the life-cycle are described. Naturally infested suckers contained sufficient metacercariae to produce a lethal infestation when two or three small fish were eaten by a kitten.—P. J. G. PLUMMER.

DUGUID, J. B., & SHEPPARD, E. M. (1944). **A Diphyllobothrium Epidemic in Trout.**—*J. Path. Bact.* **56.** 73–80. 2673

In 1942 a fatal peritonitis affected the trout in one of two large, open, storage reservoirs in South Wales so seriously that by the following summer few fish were left alive. The authors have shown that this outbreak was due to infestation with plerocercoids which, when fed to laboratory rats and to a dog, developed into adult worms resembling *Diphyllobothrium latum*. In most cases the rats threw off the infestation after 5-6 weeks, but the dog retained its tapeworm until it was removed by anthelmintic treatment. Specimens of *Diaptomus gracilis* and *Cyclops strenuus*, obtained locally, were successfully infected with coracidia from eggs obtained from the experimentally infected mammals. The authors have not yet succeeded in producing plerocercoids by feeding infected copepods to fish. How the infection entered the reservoir is not clear nor is the identity of the parasite with *D. latum* fully established as it shows certain affinities with *D. cordiceps*. Descriptions of the adult, egg, coracidium, procercoid, and plerocercoid are given.—J. N. OLDHAM.

I. LÓPEZ-NEYRA, C. R. (1942). División del género Hymenolepis Weinland (S.L.), en otros mas naturales. [**Revision of the Genus** *Hymenolepis*].—*Rev. ib. Parasit., Granada.* **2.** 46–93. 2674

II. LÓPEZ-NEYRA, C. R. (1942). Revisión del género Hymenolepis Weinland. [**Revision of the Genus** *Hymenolepis*].—*Ibid.* 113-256. 2675

I & II. In this very comprehensive work the author revises and reclassifies the genus *Hymenolepis, sensu lato*. The first part of the work is historical. The second part deals in greater detail with the individual species and gives a key for the division of the genus into revised and new genera. He describes a new generic plan for *Echinocotyle* and *Drepanidotaenia*, genera already recognized, but divides the latter into two subgenera, *Drepanidotaenia* and *Drepanidolepis*. New genera suggested are *Meggit(t)iella, Microsomacanthus, Sphenacanthus*, and *Hispaniolepis*. He revives the genus *Dicranotaenia* (Railliet) with a revised scheme of generic features; he divides this genus into the subgenera *Dicranotaenia* and *Dicranolepis*. The third part of the work describes the species in each genus and this is followed by an alphabetical list with illustrations of the specific rostellar hooks.—MILLER WATSON.

LÓPEZ-NEYRA, C. R. (1941). Especies nuevas o insuficientemente conocidas correspondientes al género Hymenolepis Weinland (S.L.). [**New and Little Known Species of** *Hymenolepis*].—*Rev. ib. Parasit., Granada.* **1.** 133–170. 2676

The author describes in detail some of the lesser known species of *Hymenolepis*. His descriptions deal with *H. macracanthos* and related species in wild geese and ducks, and the *H. exilis* group in fowls, as well as with various other species of no veterinary interest.
—MILLER WATSON.

*DABRIGEON, J. (1942). La ladrerie bovine en Anjou. [**Cysticerci in Cattle in Anjou**].—*Rec. Méd. vét.* **118.** 123–125. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 132]. 2677

Of 4,200 cattle slaughtered during a year, 81 (1·9%) were infested with cysticerci. They were found especially in the inner masticatory muscles.—T. E. G.

*SCHOON, J. G. (1942). [**On the Control of** *Taenia saginata*].—*Tijdschr. Diergeneesk.* **69.** 528–531. [Abst. from abst. in *Wien. tierärztl. Mschr.* **30.** 153]. 2678

S. reports that the incidence of cyticercosis in cattle is increasing in Holland, and estimates that 2% of cattle are affected in many places. He advocates close co-operation between the veterinary and medical professions. Control might be aided by the offering of rewards for recovered tapeworms, and stricter prevention of the sale of infected meat.—H. D. CROFTON.

BERTULLO, V. H. (1943). Hepatitis cisticercosa de los lechones ocasionada por el C. tenuicolis de la T. marginata. (1ª. comunicación). [**Hepatitis in Piglets due to** *Cysticercus tenuicollis*. **I**].—*Bol. mens. Direcc. Ganad., Montevideo.* **27.** 429–434. 2679

B. reports the frequent finding of hepatitis due to *C. tenuicollis* in piglets slaughtered in the National Abattoir. The number of condemned livers was 4,754 in 1941, 16,486 in 1942, and 7,361 in 1943. This amounted to about 80% of all piglet livers examined each month. B. noted that the condition is uncommon in adult animals and he is making a special study of this aspect of the matter.—MILLER WATSON.

RUBERT, B. (1941). Gehäufter Befall mit Echinococcus polymorphus bei Kuban-Schafen. [**Echinococcosis in Sheep from the Kuban, Caucasus**].—*Z. Fleisch- u. Milchhyg.* **52.** 58. 2680

R. examined about 2,000 lambs and older sheep from the Kuban region of the Caucasus. In each case the heart and lungs were normal, but in many animals the livers had cysts of *Echinococcus granulosus* of the *polymorphus* (*unilocularis*) type. Scolices were found in all cysts. The *granulosus, hydatidosus*, and *multilocularis* types of cyst were not found.—H. D. CROFTON.

LÓPEZ-NEYRA, C. R., & PLANAS, M. DE LOS A. S. (1943). Revisión del género Echinococcus Rud. y descripción de una especie nueva parásita intestinal del perro en Almería. [**Revision of the Genus** *Echinococcus*, **with a Description of a New Species in Dogs in Almeria**].—*Rev. ib. Parasit., Granada.* **3.** 169–202. 2681

The authors review the descriptions of the various species of *Echinococcus*, including *E. granulosus* and various species from wild carnivores. They erect a new species, *E. ortlepp*, for *E. granulosus* Ortlepp, from dogs in Pretoria. They also describe a new species found in dogs in Almeria, which they name *E. intermedius*. The eggs of this species are considerably larger than those of *E. granulosus*.—MILLER WATSON.

*HANSEN, A. C., & MADSEN, H. (1941). [**Trichinae in Silver Foxes, Mink, and Rats**].—*Maanedsskr. Dyrlaeg.* **53.** 136–138. [Abst. from abst. in *Tierärztl. Rdsch.* **48.** 324]. 2682

The authors examined 197 silver foxes, 2 red foxes, 106 mink, and 281 rats for trichinae. Twenty-eight preparations were made from each animal, but no infection was found.—H. D. CROFTON.

*KETZ. (1942). Zum Nachweis von Trichinen in Wurst und Schinken. [**Trichinae in Sausages and Ham**].—*Rdsch. Fleischbesch.* **43.** 103–104. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 143]. 2683

Previously published work has shown that the examination of sausages and ham for the presence of *Trichinella* may be simplified by pretreatment of the tissues with caustic potash. This method requires less time and less apparatus than the pepsin-HCl digestion method, the process being completed in ½–1 hour in

tissues from which the large pieces of fat have been removed. In the article are given the results of examination of tissues by the new method.—T. E. GIBSON.

*WENDEROTH, H. (1942). Über Schäden des Kreislaufapparates bei Trichinose. [**Disease of the Circulatory System due to Trichinosis.**]—*Dtsch. Militärarzt.* **7.** 687–691. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 134]. **2684**

Oedema seen in human trichinosis affects chiefly the subcutaneous connective tissue, and results from circulatory insufficiency. Thrombosis and lung infarction may occur in very heavy infestations. The heart muscle is heavily infiltrated with eosinophiles and, in an individual case described by W., degeneration of the heart muscle fibres was seen. The histological changes observed are those resulting from toxic injury to heart muscle. The electrocardiogram is similar to that recorded in other infectious diseases.—T. E. G.

AULT, C. N. (1943). Nematodes parásitos de los bovinos y ovinos en la Argentina. [**Nematodes of Sheep and Cattle in the Argentine**].—*Rev. Med. vet., B. Aires.* **25.** 468–487. [English summary]. **2635**

A. identified 26 nematodes parasitic in cattle and sheep in the Argentine. He lists these and gives descriptions of six species not previously reported from this region. These are :– *Trichostrongylus vitrinus*, *Ostertagia trifurcata*, *Marshallagia marshalli*, *Cooperia surnabada*, *Trichuris globulosa*, and *Strongyloides papillosus*.—MILLER WATSON.

OLIVIER, L. (1944). **Acquired Resistance in Chickens, Turkeys, and Ring-Necked Pheasants to the Gapeworm,** *Syngamus trachea*.—*J. Parasit.* **30.** 69–76. **2686**

The birds used in these experiments were all obtained as day-old chicks and were housed under parasite-free conditions until required for use. The uteri of mature gapeworms from turkeys, were teased apart in water and kept at room temperature until the eggs were embryonated. Soon after this many of them hatched, so that the material for inoculation consisted of a mixture of embryonated eggs and hatched larvae. Four to six weeks after a first inoculation of 1,500–10,000 eggs and larvae, the birds were given a second inoculation of comparable size to determine whether they had acquired a resistance. They were killed a fortnight after the second inoculation, this time interval being sufficient for the worms of the second inoculation to become established in the trachea, although they were still easily distinguishable, by their size and stage of development, from worms resulting from the first inoculation.

Turkeys, ring-necked pheasants, and chickens were found to develop a marked resistance to reinfestation as a result of a single infestation with *Syngamus*. The results of experiments with pheasants and chickens suggest that in these species the resistance may persist after the immunizing infestation has been lost. When chickens and turkeys of the same age were fed similar infecting doses, the turkeys carried more worms than the chickens, indicating that the turkey is a more suitable host than the chicken. Comparison of the number of worms present six weeks after infestation shows that pheasants tend to lose their infestation more quickly than turkeys. It was also noted that the percentage development of worms varies inversely with the number of infective eggs and larvae fed. In explanation, it is suggested that large doses of eggs induce a strong host reaction enabling the animal to eliminate most of the worms, whilst smaller doses give rise to a milder reaction and more worms are able to survive. It was noted that most of the gapeworms which became established in the initial infestation were lost rapidly, so that there was only a small number of worms surviving at 6–8 weeks after inoculation. This loss of worms may be due in part to age resistance but acquired resistance must also play a part : it is not due to a short life span of the worm.—T. E. GIBSON.

*GOTHIE, S. (1942). Développement comparé de l'oeuf d'Ascaris megalocephala en anaérobie et en aérobie. [**Development of Eggs of** *Parascaris equorum* **in Aerobic and in Anaerobic Conditions**].—*C. R. Soc. Biol. Paris.* **136.** 487–488. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 130.] **2637**

Eggs were aseptically dissected from the oviducts of *Parascaris* under hydrogen-saturated vaseline and incubated in uterine fluid in hermetically sealed containers at 37°C. After fertilization and before the development of the first polar body, meiosis and membrane formation were never seen either in aerobic or anaerobic preparations. After formation of the first polar body, and before the appearance of the second, the eggs develop in anaerobic media to the four-blastomere stage and then quickly degenerate. In aerobic media, development of the active embryo takes place. During development, variation in the oxidation-reduction potential may occur. In liquid media the eggs begin to fluoresce soon after being removed from the oviduct ; this fluorescence is independent of the oxidative state and varies with the hydration.—T. E. G.

See also absts. **2818** (helminths of Hawaii), **2817** (*Strongyloides ransomi* in pigs), **2792** (trichinosis), **2778-2781**, **2817** (anthelmintics).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

CONCEIÇÃO, J. M. (1942). Um caso de linfadenose com localização cardíaca. [**Lymphadenosis of a Bovine Heart**].—*Bol. pec., Lisboa.* **10.** No. 1. 81–83. **2688**

A description of a tumour present on the outer surface of the right auricle of the heart of a bovine animal. The tumour was 46 cm. in circumference, weighed 1,370 g., was whitish yellow in colour, and stretched from the root of the pulmonary artery to the aorta. The histology is described.—H. G. CIMINO.

PELOURO, J. T. (1942). Um caso espontâneo de teratoma testicular num galo. [**Spontaneous Testicular Teratoma in a Cock**].—*Bol. pec., Lisboa.* **10.** No. 1. 31–33. **2689**

A teratoma weighing 900 g. is described in a Rhode Island Red cock.

It was faintly yellow in colour and there were tiny, bluish, lenticular spots on the surface. In the connective tissue, interspersed with adipose cells, there were pieces of cartilage of various shapes, also focal centres of bony material, dermoid cysts, and blood vessels.—H. G. CIMINO.

KAURA, R. L. (1941). **The Possible Existence of Fowl Paralysis (Neurolymphomatosis gallinarum) in India.** —*Indian J. vet. Sci.* **11.** 367–372. **2690**

K. discusses the possible existence of fowl paralysis in India. Reference is made to a number of records in the country where paralysis in fowls has been variously

ascribed to nutritional deficiencies, polyneuritis, neurolymphomatosis, Newcastle disease etc. In these cases no proper classification of the various types of paralysis encountered had been attempted, and it is suggested that the possibility that the disease was fowl paralysis was probably overlooked when some other diagnosis was given. The need is stressed for histopathological examinations before a diagnosis of certain of these conditions can be made.—ZAFAR ALI.

See also abst. **2818** (fowl leucosis in Florida, vitamin B and fowl paralysis in Hawaii, F.L. and F.P. in Iowa).

DISEASES, GENERAL

HUDSON, E. H. (1944). **The Role of the Reservoir Host in Tropical Disease.**—*Amer. J. trop. Med.* **24.** 125–130. **2691**

This article is written from the point of view of human medicine, and a reservoir host is defined as a lower animal which shares some disease or parasite with man, the infection or parasite being equally adapted to man and to the reservoir. [A more usual view of a reservoir host is, a species of animal which harbours an infection pathogenic to another species of animal, but not necessarily to itself.]

Four tables are given showing the helminths, protozoa including spirochaetes, bacteria, and viruses and rickettsia common to man and the lower animals. It is claimed that in temperate climates, although infections common to man and animals exist, none of them constitutes a grave menace to human health, whilst in the tropics the animal reservoir host plays a very important role. It is urged that in order to deal with the situation in the tropics, knowledge concerning animal reservoirs should be mobilized; it is stated, however, that knowledge of the fundamental biology of the animals is lacking, and that veterinary medicine and comparative pathology have entered but tentatively into the tropical field and the knowledge which they can contribute has not been integrated into the science of human disease. Facilities for research in these sciences have been scanty and restricted in geographical extent and financial support.—U. F. RICHARDSON.

MALBRANT, R., CECCALDI, J., GUILHAUMOU, F., & GROSPERRIN, R. (1943). Brucellose bovine, trypanosomiase et prémunition. [**Bovine Brucellosis and Trypanosomiasis and Premunition**].—*Rev. Sci. méd. pharm. vét., Brazzaville.* **2.** 199–208. **2692**

Cases of abortion occurred in two herds of cattle which became infected with *Trypanosoma vivax*, the abortions occurring in animals which were known to be trypanosome infected. When the trypanosome infection was suppressed by treatment the abortions ceased. The occurrence of a case of human undulant fever led to the agglutination testing of the herds; positive reactions were obtained, although attempts to isolate *Br. abortus* from animals with positive reactions were not successful. Positive aggln. reactions were also given by two calves affected with diarrhoea.

It is suggested that contagious abortion was enzootic in these herds, the animals contracting infection as calves and developing a "premunity", and that the trypanosome infection had broken down the resistance to *Br. abortus* by damaging the reticulo-endothelial system.—U. F. RICHARDSON.

QUIN, J. I. (1942). **Bloating in Ruminants. Its Development and Control.**—*Fmg S. Afr.* **17.** 757–760 & 774. **2693**

The main cause of bloating in ruminants in South Africa is the ingestion of green lucerne grass. The capacity of lucerne to cause bloat varies, as does the susceptibility of animals to bloating, and this renders effective control difficult. The rapid fermentation of sugar which occurs is due to a specific yeast, *Schizosaccharomyces ovis*, which is apparently a normal infection on lucerne. The cause of bloating is the production of a mass of foam in the rumen which cannot be got rid of as gas would be. To prevent bloating, hungry animals should be kept away from green lucerne in case they should eat it greedily. A mixed diet which will partially satisfy the appetite and prevent greedy feeding on lucerne is indicated. Animals constantly on green lucerne learn to eat small quantities at a time. Ingestion of green lucerne may also produce an illusory feeling of satisfaction and lead to the consumption of too little food.
—E. M. ROBINSON.

LYLE-STEWART, W., & GRAY, E. (1944). **Purulent Encephalitis in Sheep: "Pseudo Sturdy".**—*Vet. J.* **100.** 32–35. **2694**

Nine cases of encephalitis in sheep are reported. The clinical symptoms were those usually associated with brain disturbances. Acute rhinitis and purulent encephalitis were observed P.M. Cultures from the green pus in the brain yielded a Gram-positive organism which was not identified. [The characters of this organism resemble those of *Corynebacterium pyogenes*.]
—B. WEITZ.

INSKO, W. M., Jr., MACLAURY, D. W., & RINGROSE, A. T. (1942). **Effect of Relative Humidity and Amount of Turning on Hatchability of Turkey Eggs and Livability of Poults.**—*Bull. Ky agric. Exp. Sta.* No. 438. pp. 14. **2695**

It is suggested that the results of these experiments should be considered supplementary to the recommendations made by MARTIN & INSKO (1935). The present bulletin describes additional experiments to ascertain the best relative humidity and when to stop turning the eggs for the best hatchability. Two trials were run, involving 6,601 fertile turkey eggs, 11 hatches, and four levels of humidity, to determine the effect of relative humidity in forced-draft incubators and two other trials were run, involving 8,454 fertile turkey eggs and 15 hatches, to determine whether discontinuing turning before the 24th day of incubation had any effect on hatchability.

The main findings and recommendations were as follows:—

(1). Hatchability was best with a temperature of 99½°F. dry-bulb and 87–88°F. wet-bulb, *i.e.* relative humidity 61–63%, for the first 24 days, and with 90°F. wet-bulb temperature, *i.e.* relative humidity 70%, during the next four days of incubation.

(2). Incubator moisture had little effect on embryo mortality during the incubation period, but it appeared valuable to avoid wet-bulb temperatures as low as 83°–84°F. for the best brooding results. Humidity levels during incubation had no influence on mortality of poults during the first six weeks after hatching.

(3). Hatchability was slightly higher when the hatch was completed in the forced-draft incubator rather than by transferring eggs to a natural-draft incubator.

(4). It was found to be practical to stop turning eggs after the 20th day of incubation instead of continuing until the 24th day and to transfer them to the hatching compartment, as long as the humidity was not raised until the 24th day. Early transfer combined with an increase in humidity had an adverse effect on hatch-

ability. This point was considered to be of considerable practical value as it would enable the setting schedule to be placed on a weekly basis and the incubation compartment to be kept full at all times.

(5). Prior to the 20th day eggs should be turned at least four times daily, care being taken to see that eggs are not in the same position on two successive nights.—J. D. BLAXLAND.

BEESON, P. B., CHESNEY, G., & MCFARLAN, A. M. (1944). **Hepatitis Following Injection of Mumps Convalescent Plasma. I. Use of Plasma in the Mumps Epidemic.**—*Lancet.* **246.** 814–815. **2696**

MCFARLAN, A. M., & CHESNEY, G. (1944). **Hepatitis Following Injection of Mumps Convalescent Plasma. II. Epidemiology of the Hepatitis.**—*Ibid.* 816–817. **2697**

HAWLEY, W. L., MCFARLAN, A. M., STEIGMAN, A. J., MCMICHAEL, J., & DIBLE, J. H. (1944). **Hepatitis Following Injection of Mumps Convalescent Plasma. III. Clinical and Laboratory Study.**—*Ibid.* 818–821. **2698**

I. An attempt was made to control an epidemic of mumps in an army unit by the passive immunization of susceptibles with two batches of convalescent serum. The first batch of serum was administered to 266 men, and the second to 204 of these same men 16 days later. There were no reactions. Hepatitis developed in 44% of the inoculated men.

II. The epidemiology of the hepatitis mentioned in I is discussed. The vast majority of cases developed in 59–94 days after the inoculation. There were only a few sporadic cases of hepatitis in other units of the area, and in nearby villages. Epidemics had not occurred in the two towns which were the usual resorts of men on short leave. There was no evidence that the cases had arisen from contact with infective hepatitis cases, and both the epidemic curve and the interval between the onset of cases within the same troop or barrack hut are considered to have differed from those which would be expected in outbreaks of infective hepatitis.

It is therefore considered that the hepatoxic agent presumably present in one of the batches of plasma was not the virus of infective hepatitis.

III. As compared with cases of infective hepatitis, it is considered that those discussed in I and II showed a greater lag in reporting ill, a lower incidence of vomiting, and a higher incidence of severe arthralgias and rashes. Weil's disease, bacterial infections, and infectious mononucleosis were taken to be excluded by appropriate examinations. Data are presented also upon white-cell counts, blood bilirubin determinations, and upon the histological features of sections prepared from five liver biopsies.—A. N. WORDEN.

SHEEHAN, H. L. (1944). **Epidemiology of Infective Hepatitis.**—*Lancet.* **247.** 8–11. **2699**

Evidence is adduced to support the suggestion of BIGGER [(1943). *Lancet.* **244.** 457.] that the transmission of "infective hepatitis" during neoarsphenamine (NAB) inoculations is due to infection of the syringe and subsequent transfer from patient to patient. The problem appears to have arisen from what is stated to be the necessary wartime reduction in the frequency of sterilization of syringes, a practice which appeared to have been justifiable in so far as sepsis has not followed the use of syringes which are merely washed out with tap water or saline between inoculations.

Hepatitis was found to be transmissible from patient to patient by syringes not sterilized before each time of use, whether or not NAB was administered, and the only aetiological role attributed to NAB is that of impairment of liver function in a patient who already has an active hepatitis.

In all the types of "syringe-transmitted hepatitis" studied, the incubation period appeared to be about three months, *i.e.* the same as that in homologous serum jaundice. In one series which could be closely studied, however, the donor's blood appeared to have been infectious between three and nine weeks before the onset of jaundice.

It is suggested that "infective hepatitis" as seen in the Mediterranean theatre of war might well be transmitted by biting insects.

S. inclines to the view that infective hepatitis as reported from Great Britain and the Mediterranean, homologous serum jaundice, and the "syringe-transmitted hepatitis" are one and the same disease, and that variations in the incubation period are presumably due to variations in the strain of the virus and to differences in the method of infection and the individual susceptibility of the patient. [That this view is not generally accepted is clear from the preceding abstracts (nos. 2702–2704).]—A. N. WORDEN.

TAYEAU, F. (1943). Le système lipidoprotéidique du sérum sanguin chez les malades atteints d'ictère par rétention. **[The Lipo-Protein Content of the Blood Serum of Persons with Obstructive Jaundice].**—*C. R. Soc. Biol. Paris.* **137.** 240–241. **2700**

T. states that in cases of obstructive jaundice the serum contains two categories of lipoids, *viz*, (1) those easily extracted by shaking the serum with ether, and (2) those not extractable with ether, and bound to serum protein in the form of lipoprotein complexes. It is considered that lipoids of the first category, which are not present in normal serum, are not utilizable in ordinary metabolic processes, and that their presence explains the hyperlipaemia, and especially the hypercholesteraemia, of obstructive jaundice.—A. N. W.

PETERS, R. A., THOMPSON, R. H. S., KING, A. J., WILLIAMS, D. I., & NICOL, C. S. (1944). **Sulphur-containing Amino-Acids and Jaundice. [Correspondence].**—*Nature.* **153.** 773. **2701**

Cases of post-arsphenamine jaundice were treated with 2 g. daily of cysteine (as the ester hydrochloride), with 2·5–5 g. daily of methionine, or with 60 g. daily of casein. Appropriate controls, receiving the same diet as the treated cases, were maintained throughout.

The results in over 300 cases are not assessed, since in them the jaundice was either too slight or too long established for satisfactory demonstration of a therapeutic effect. In 150 cases regarded as suitable for consideration, the mean number of days required for the serum bilirubin to fall below 4 mg. per 100 ml., with no subsequent exacerbation, counted from the onset of jaundice, was 25·8 for 57 control cases, 32·9 for 19 cases treated with casein, 21·3 for 41 cases treated with cysteine, and 19·7 for 33 cases treated with methionine. The percentage recovery under the various treatments during the first two, the third, and the fourth weeks is also tabulated. Statistical analysis indicates that both cysteine and methionine exerted a significant, but not remarkable effect upon the course of the jaundice, whereas casein was without effect.

—A. N. WORDEN.

EMSBO, P. (1944). Forbening i Aorta og Arteria pulmonalis hos en Kvie. (Ossificatio scutellata aortae et arteriae pulmonalis). **[Ossification of the Aorta and Pulmonary Artery in a Heifer].**—*Maanedsskr. Dyrlaeger.* **56.** 93-103. **2702**

A detailed and illustrated (with photomicrographs) account of ossification of the arteries springing from the heart in a two-year-old heifer which died suddenly. Autopsy revealed haemothorax and a large mediastinal haematoma arising at the thoracic aorta and extending from the heart through the diaphragm over a total

distance of 25 cm. The aorta and brachio-cephalic trunk were ossified completely so as to become rigid tubes which were thickest at the mitral valve (2–3 mm.) and thinnest distally, the bone plate tapering off and being succeeded for a short distance by disconnected bone plaques. The root of the pulmonary artery was similarly affected, but not completely enough for the formation of a complete tube of bone. Death had been due to rupture of the ossified thoracic aorta at the top of the aortic arch. The origin of the ossification was obscure and no other change in the heart was present except slight left ventricular hypertrophy. The bone deposit was in the media coat of the arteries and there was corresponding atrophy of the muscular and elastic tissue layer. The bone layer was compact osseous tissue. The histology is fully described.—J. E.

COLES, J. D. W. A. (1943). **Dilatation of the small Intestine of the Fowl.**—*J. S. Afr. vet. med. Ass.* **14.** 94–98. **2703**

A number of causes for ballooning of the small intestine in varying degrees in the fowl have been described. A previously undescribed form of intestinal dilatation occurred in 39 cases in poultry in a pedigree flock at Onderstepoort over a period of four years. These cases were either in culls or in birds which had died. All the cases were in females, but very few males were kept beyond the age at which it occurred. The condition is often fatal but apart from lowered egg production, emaciation was the only symptom observed. P.M. changes were those of death due to gradual starvation. All attempts to determine the aetiology of the condition failed, but the family histories of the affected birds suggested that inherited factors played a role in causation, and that some of the progeny of a certain cock showed a predisposition to the condition. —E. M. ROBINSON.

MCNUTT, S. H. (1943). **Some Infectious Diseases Involving the Nervous System of Swine.**—*N. Amer. Vet.* **24.** 409–417. **2704**

A general discussion. No new material is provided. —W. J. MCILROY.

CHARTON, A. (1943). De la paralysie des nerfs de la queue de cheval chez le chien. [**Paralysis of the Nerves of the Cauda Equina in the Dog**].—*Bull. Acad. vét. Fr.* **16.** 28–32. **2705**

Five cases of paralysis of the nerves of the cauda equina in the dog are described. Two were the result of trauma, two appeared to be infectious in origin, and one was thought to be the result of vitamin B_1 deficiency. The condition was characterized by paralysis of the tail and of the urethral and anal sphincters. —ISOBEL W. BROCKLEHURST.

EGGLETON, M. G. (1944). **Crush Kidney Syndrome in the Cat.**—*Lancet.* **247.** 208–210. [Author's summary copied *verbatim*]. **2706**

A substance toxic to the kidney can be extracted from the muscles of limbs which have been tightly bound for some hours, but not from normal muscle. Such a substance develops in undamaged muscle, however, if the muscle is kept ischaemic (by death of the animal) for 4–10 hours. Thereafter it disappears again. It is non-dialysable. These facts suggest that the toxic material is some early intermediate breakdown product of a large molecule, formed only under strictly anaerobic conditions. Its unstable nature may help to account for the lack of correlation between the severity of renal symptoms and the duration of crush in air-raid casualties (Bywaters). It may also explain the erratic results obtained by Green (1943) with extracts made from completely disrupted (frozen) cells or from denatured (acetone precipitation) cells. Any further conclusion as to the chemical nature of this toxic material must be conjectural at present, but the possibilities are limited. Recent work on proteinase activity (Bergmann and Fruton 1941) suggests that the toxic material might well be an early breakdown product of protein, formed only during strict long-continued anaerobiosis and never during normal aerobic protein katabolism in the cell.

SUNDERMAN, F. W. (1942). **Recent Advances in the Significance and Interpretation of Phosphatase Measurements in Disease.**—*Amer. J. clin. Path.* **12.** 404–411. **2707**

Of the known phosphatases only the alkaline phosphatase with optimum pH of 9·3 occurring in kidney, bone, serum and many other tissues, and the acid phosphatase with an optimum pH of 5 found in liver, spleen, pancreas, prostate and serum, are of clinical importance. Phosphatases can be demonstrated histologically by allowing the sections to act on calcium glycerophosphate and staining the deposited calcium phosphate (Gomori). The value is discussed of serum phosphatase determinations in diagnosis of bone diseases, carcinoma of the prostate, jaundice and liver disease, thyroid diseases, and scurvy.—E. BOYLAND.

DECHAMBRE, E. (1943). A propos d'une déformation de la face de certains singes en captivité. [**Deformity of the Face of Monkeys in Captivity**].—*Bull. Acad. vét. Fr.* **16.** 24–26. **2708**

Certain captive monkeys, including the macaques, present a facial deformity, characterized by a lowering of the eyebrows, consequent on flattening of the orbit. The fronto-nasal profile, instead of being rectilinear, is broken at the root of the nose. This feature was found in adult monkeys brought up in captivity, but not in those captured when fully grown. It is said to have been due to rickets, or to other interference with calcification of the cranial sutures, which allowed the powerful masseter and zygomatic muscles to pull the orbit out of shape.—ISOBEL W. BROCKLEHURST.

*HÁMORI, B. (1941). [**Blocky Feet and Knuckling of the Fetlock from the Hereditary Aspect**].—*Közl. Összehas. élet-és kórtan Köréből.* **30.** 1. [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **50.** 231]. **2709**

In eight studs, among 1,564 unweaned, weaned, and yearling foals, these conditions occurred in 227 animals. Knuckling occurred in 60 foals in both, and in 7 foals in only one foreleg, and "blocky feet" in 50 foals in one, and in 98 in both, forefeet; in six foals "blocky feet" was present in all four feet and in another six animals in both hind feet. In one stud, in five years, amongst 827 foals there were 121 animals affected with these conditions. From the investigations made, it is concluded that "blocky-feet" and knuckling at the fetlock are the same disease and have a common aetiology, pathogenicity and treatment. In about 75% of cases, the conditions develop only after birth in hereditarily susceptible animals due to unsuitable conditions and prolonged faulty feeding. The conditions often occur in newborn foals due to metabolic disturbances. In this stud, the cause of the disease amongst the unweaned foals is stated to have been changes in the mares' milk following wrong feeding and, in weaned foals, a pronounced *erdalkali-alkalische* [see MAREK *et al.*—*V. B.* **1.** 261.] action in the food, *e.g.* the grazing.

Cures can be effected by continual massage of the flexor tendon, setting in splints, regularly repeated hoof trimming, and fitting of suitable shoes. The length of treatment varies from two days to two years. 24·2% of the affected animals were disposed of. Hereditary transmission is through both the stallion and the mare.

The condition occurs often amongst smallholders' animals.—J. LAING.

HÖHN, W. (1942). Adaktylie, ein neuer rezessiver Letalfaktor in der Schafzucht. [**Adactylia : A New Recessive Lethal Factor in Sheep**].—*Dtsch. tierärztl. Wschr.* **50.** 349–350. **2710**

H. has studied adactylia in merino sheep. The condition may occur in one, two, three, or all four legs. The lambs are full-term, but cannot stand, and die within 24 hours. Deformations of different types and degrees, which may be symmetrical, and may involve phalanges as well as hooves, are described. The deformity may occur in one only, or in both of twins. The defect is hereditary. It had not previously been known in Germany and appears to have been imported in French rams between 1914 and 1918. It belongs to the recessive group of lethal factors.—O. CRUSE.

GRUENWALD, P. (1944). **Studies on Developmental Pathology. I. The Morphogenesis of a Hereditary Type of Microphthalmia in Chick Embryos.**—*Anat. Rec.* **88.** 67–81. **2711**

GRUENWALD, P. (1944). **Studies on Developmental Pathology. II. Sporadic Unilateral Microphthalmia and Associated Malformations in Chick Embryos.**—*Amer. J. Anat.* **74.** 217–257. **2712**

I. Sections were made from the eyes of embryo chicks affected with an hereditary microphthalmia, said to be transmitted by a single recessive gene, in order to determine the morphology of the condition.

Changes were first observed in five-day embryos when abnormal growth centres, associated with minute cysts, appeared in the retina. These took the form of retinal folds projecting into the vitreous humour ; later the peaks of these folds showed signs of degeneration. From the fifth day onwards, the eyes became appreciably undersized until in the 22-day embryo their diameter was approximately half that of the normal eye. It was also observed that iris growth was irregular, the optic nerves were thin, and the scleral cartilage became thickened.

It is emphasized that in this type of micropthalmia the malformation must be considered as typical. In all cases abnormal growth proceeded as regularly as the development of a normal organ.

II. The malformations reviewed in this report were atypical and no hereditary factor was involved. The detailed case reports given indicate an irregular series of growth disturbances in most of the ocular structures examined, with complete lack of uniformity.

The teratological factors responsible for these atypical malformations may be classified into three groups according to the location from which they influence the structure in question. They may be within the affected part itself, within the embryo, or outside the embryo. Evidence is produced which indicates that in these cases all factors were involved. The rapid growth and delicate nature of ocular structures makes them susceptible to damage ; the rotation of the head exposes the eye, particularly the left, to temporary hazards, while of the extrinsic factors, those of a chemical nature are probably the most likely to cause these aberrations.—C. W. OTTAWAY.

*DUPONT, A. F. A. (1943). Les facteurs héréditaires de la stérilité. [**Hereditary Factors in Sterility**].—*Thesis, Alfort.* [Abst. from abst. in *Rec. Méd. vét.* **119.** 125]. **2713**

This work is divided into two parts : the first deals with the role of hereditary factors in the aetiology of sterility and the second with a form of sterility which arose in cross-breeding with two strains of tailless mice. The role of hereditary factors resulting in sterility is examined in relation to anomalies of the male and female genital system, cancer, general infections, nutritional deficiencies, inbreeding, chromosome irregularity, and sterility due to unknown hereditary causes. A description is given of male sterility in strains of tailless and normal mice, which is apparently due to hereditary factors, but for which the exact mechanism of inheritance has not been determined. D. believes that sterility, like the majority of pathological hereditary characters, behaves as a recessive factor.—N. J. SCORGIE.

See also absts. **2817**, **2818** (livestock diseases in the U.S.A.), **2819** (in Uruguay), **2818** (canine meningo-encephalitis in Kansas, bloat in S. Dakota).

NUTRITIONAL AND METABOLIC DISORDERS

MUKHERJEE, R. (1943). **Animal Nutrition.**—*Ann. Rev. Biochem. India.* **13.** 33–39. **2714**

The articles on animal nutrition and allied subjects published in India in 1942 are reviewed. These articles refer to :– the yield and hydrocyanic acid content of giant star grass (*Cynodon plectostachyum*) grown in India—feeding experiments showed one sample to be harmless to cattle and sheep ; yield and composition of some grasses in relation to the interval of cutting ; composition of berseem at several stages of growth ; carotene and nitrogen content of some fodders as affected by maturity ; carotene content of several cattle feeds ; change in carotene content during hay-making and storage of plants ; carotene and vitamin A in milk and faeces of cattle on carotene-free and carotene-rich feeds ; determination of total and soluble oxalates in biological materials ; the oxalic acid content of some fodders and the possibility of its destruction by rumen microflora ; composition and nutritive value of some cereal straws as affected by alkali treatment (cold, 1·25% caustic soda); faecal phosphatase excretion of normal and fasted goats including the method of its estimation ; relative value of two supplements containing separated milk and groundnut meal on the growth of chicks ; carotene and vitamin A potency of milk and blood plasma of cows at different levels of carotene ingestion ; biological value (on rats) of the proteins of milk of cows, goats and buffaloes ; the association of fainting fits in calves with low serum magnesium concentration ; trichloracetic acid as an extractant in phytin estimation ; semi-micro estimation of urinary allantoin ; reliability of the freezing point test for detecting adulteration of milk ; the optimum conditions for the manufacture of Surati cheese.—R. MUKHERJEE.

SERFONTEIN, P. J. (1943). **Feeding Experiments with Ducks.**—*Fmg S. Afr.* **18.** 807–818. **2715**

Experiments were carried out to determine whether certain deformities occurring in ducks, such as crooked wings, stunting, hunch backs, and deformed beaks, were due to dietetic factors. It was found that a considerable saving could be effected in feeding costs by adding green food from the fourth week, but this did not influence the occurrence of deformities. A lower fibre percentage was found to be beneficial in the first four weeks. The addition of flavin to the diet stimulated growth, but did not prevent deformities although these were then less frequent. The addition of manganese sulphate did not prevent the development of crooked wings and the rate of growth was normal even if the manganese content was below normal.—E. M. R.

*Vollmer, H., & Melde, G. L. (1941). **[Experiments on Milk Anaemia in Rats with Special Consideration of Sheep Milk Anaemia].**—*Klin. Wschr.* **20.** 17–19. [Abst. in *J. Dairy Sci.* **26.** A110, copied *verbatim.* Signed : R. E. L. B.] **2716**

Rats were fed sheep, cow or goat milk exclusively for a long period. All 3 types of milk caused a hypochromic anemia. The anemia produced by goat or sheep milk was inhibited (hemoglobin in the sheep milk experiments), transitorily improved (erythrocytes in the sheep milk experiments) or extensively removed (goat milk experiments) if the diet of the milch sheep or milch goats was supplemented with carrots. When the rats with the sheep milk anemia were placed on a mixed diet, the recovery from the anemia could be hastened by supplementary feeding of carrot juice. The course of the sheep milk anemia was essentially more favorable than that of the goat milk anemia. The better general condition of the rats fed sheep milk is believed to be due to the higher content of fat and protein in sheep milk.

Biester, A., Leichsenring, J. M., Burrill, L. M., Norris, L. M., & Deinard, H. H. (1942). **The Role of Diet in Blood Regeneration.**—*Tech. Bull. Minn. agric. Exp. Sta.* No. 153. pp. 34. **2717**

Anaemia was induced by haemorrhage in otherwise normal dogs and bitches (10–25 kg. body weight) and recovery studied on a uniform synthetic diet supplemented with 3·2% dried yeast or with certain yeast fractions. Recoveries were less satisfactory when heat-stable factors in yeast were used to replace untreated yeast, but the alcohol-soluble factors of yeast fully replaced its activity.

In further series of experiments, raw liver was found to be a potent source of the factor or factors responsible for recovery. In terms of haemoglobin, red cell volume regeneration, or individual cell volume, autoclaved liver was also highly effective, but in animals so treated, red cell diameter returned to normal slowly. It is suggested therefore that different factors are responsible for restoration of cell numbers, volume and haemoglobin content on the one hand, and cell diameter on the other.—A. N. Worden.

Common, R. H., & Bolton, W. (1944). **Dried Potato Products and Nutritional Encephalomalacia in Chicks. [Correspondence.]**—*Nature, Lond.* **153.** 744–745. **2718**

It was thought possible that under wartime conditions dried potato protucts might be substituted for maize meal and other cereals in chick-rearing rations, owing to the good results already obtained with these products with fattening pigs and laying pullets. Preliminary experiments showed that replacement of the maize meal by dried potato meal in a ration considered to contain adequate amounts of essential vitamins led to serious symptoms of nutritional deficiency and mortality from about the middle of the second week onward. Typical brain lesions were noted and histological examination confirmed the diagnosis of nutritional encephalomalacia or " crazy chick " disease.—J. D. B.

Lillie, R. D., Ashburn, L. L., Sebrell, W. H., Daft, F. S., & Lowry, J. V. (1942). **Histogenesis and Repair of the Hepatic Cirrhosis in Rats produced on Low Protein Diets and Preventable with Choline.**—*Publ. Hlth Rep., Wash.* **57.** 502–508. [Authors' conclusions copied *verbatim*]. **2719**

In rats low protein, choline-poor diets produce a peculiar hepatic cirrhosis characterized particularly by fatty infiltration and by the appearance of a peculiar hyaline substance, designated as " ceroid ", in liver cells and various phagocytic cells in the liver and in other viscera, notably spleen and lungs.

Correction of the major dietary defects results in quite prompt regression of the fatty changes, increases in size and, apparently, number of liver cells and persistence of the fibrous trabeculation and of the ceroid phagocytes.

This experimental cirrhosis is not identifiable with any of the previously described experimental toxogenic cirrhoses nor with any of the usual varieties of hepatic cirrhosis in man.

Endicott, K. M., & Lillie, R. D. (1944). **Ceroid, the Pigment of Dietary Cirrhosis of Rats. Its Characteristics and Its Differentiation from Hemofuscin.**—*Amer. J. Path.* **20.** 149–153. **2720**

A study was made of the staining reactions of the pigmented material, designated " ceroid " [see preceding abst.], which occurs in rats subjected to choline deficiency or to certain other dietetic disturbances. The appearance of ceroid following some 16 histological treatments is listed, and it is concluded that it has no properties which would justify its classification as an anthocyanin, sterol, carotenoid, porphyrin, or haemoglobin derivative.—Alastair N. Worden.

Popper, H., György, P., & Goldblatt, H. (1944). **Fluorescent Material (Ceroid) in Experimental Nutritional Cirrhosis.**—*Arch. Path.* **37.** 161–168. **2721**

A golden-brown fluorescent material was seen in the livers of rats with experimental nutritional cirrhosis produced by a diet low in casein (due to methionine deficiency). Its deposition was enhanced by administration of cystine and prevented by administration of choline alone, of cystine and choline combined, and of *p*-dimethyl aminoazobenzene. The substance, which appeared to be identical with " ceroid " [see preceding absts.], seemed to be connected with the development of fat in cirrhosis. It was shown to be inert towards reagents used to identify it chemically, and is believed to be a pigment left behind when fat disappears from liver cells. In more than 200 normal and pathological human livers examined, the material was not found. —Rachel Marshall.

Hatch, R. D. (1944). **Vaginal Smears in the Diagnosis of Vitamin A Deficiency.**—*J. Amer. vet. med. Ass.* **104.** 215–216. **2722**

Smears were taken with the aid of a glass rod from the dorsal vaginal wall of cows, just above the vaginal opening of the cervix. The appearance of such smears, either stained with methylene blue or unstained, was the same whether from normal or from vitamin A deficient animals.—A. N. Worden.

Lecoq, R., Chauchard, P., & Mazoué, H. (1943). Mise en évidence par la technique chronaximétrique d'un rachitisme " invisible ". **[Demonstration of " Invisible " Rickets by Chronaximetry].**—*C. R. Soc. Biol. Paris.* **137.** 204–205. **2723**

In continuation of earlier studies on rickets in rats [*V. B.* **12.** 299.], it is stated that it has been found possible to demonstrate early evidence of rickets on a vitamin D deficient diet by measurements of chronaxia, which becomes abnormal before other disturbances are apparent.—A. N. Worden.

Robinson, F. A. (1944). **The Nature of the Vitamin B_2 Complex.**—*Nature, Lond.* **153.** 478–481. **2724**

A brief but useful review, which deals with vitamins B_1, B_6, nicotinic acid, riboflavin, pantothenic acid, inositol, choline, *p*-aminobenzoic acid, biotin, methylimidazolone-caproic acid, folic acid, xanthopterin, and various other substances the existence of which may be postulated as the result of experiments upon micro-

organisms and chicks. The term " biotic " is suggested as a suitable name for a member of the group of substances which " includes not only vitamins, as generally understood, but also essential metabolites, growth factors, and possibly even amino-acids, for example, methionine, with specific actions ". The word is further defined as applying to " all substances of natural origin, and more particularly substances produced by micro-organisms, minute amounts of which are capable of stimulating the metabolism of living organisms and which are specific in their action, that is, not readily replaced even by closely related substances ".—A. N. W.

BROCHET, L. (1943). La pellagre. **[Pellagra]**.—*Bull. Acad. vét. Fr.* **16.** 59–64. **2725**

A brief historical review of pellagra in human beings and animals.

Attention is drawn to the fact that pellagra in the dog may be more widespread on account of war-time diet. It is pointed out that the differential diagnosis of nicotinic acid deficiency is complicated in that other deficiencies are also likely to be concerned. The attention of the veterinarian is directed to the successful use of nicotinamide in human pellagra.—S. JAMIESON.

COLE, C. L., RASMUSSEN, R. A., & THORP, F., Jr. (1944). **Dermatosis of the Ears, Cheeks, Neck and Shoulders in Young Calves.**—*Vet. Med.* **39.** 204–206. **2726**

A description of a condition in seven out of 55 young calves, 16–73 days old, which involved the ears, cheeks, necks, and shoulders, and was accompanied by pain, swelling of the skin, and loss of hair. No skin parasites could be demonstrated, and local treatment had little effect. The plasma ascorbic acid value of all these calves was very low. After weaning, the calves had been fed a diet consisting of 4 lb. of milk per day, a commercial calf food and grain, alfalfa-brome hay, and 50,000 U.S.P. units of vitamin A and 100 mg. of nicotine acid per week.

Four of the seven affected calves were each given an initial dose of 3 g. of ascorbic acid by subcutaneous injection, and all showed a rise in blood plasma ascorbic acid. In addition, two of the four received 1 g. of chlorobutanol per day in the food for 21 days ; these showed the highest levels of blood plasma ascorbic acid. The other two were fed 1 g. of ascorbic acid per day for nine days, given no addition for five days, and were then given the ascorbic acid again for 13 days ; one of these calves showed a drop in blood plasma ascorbic acid when the feeding was stopped, but this level rose when feeding was resumed. These four animals recovered much more quickly from the condition than the three untreated calves.—J. O. L. KING.

See also absts. **2709** (diet in blocky feet and knuckling of fetlock in foals), **2708** (rickets), **2817** (carotene requirements of cattle), **2779** (B complex), **2818** (in fowl paralysis in Hawaii).

PHYSIOLOGY AND ANATOMY

DA COSTA, E. A. S. R. (1942). Nótula àcêrca da variação da produção leiteira na ovelha saloia em função da temperatura ambiente. **[Variations in the Milk Yield of Ewes, dependent upon the Atmospheric Temperature]**.—*Bol. pec., Lisboa.* **10.** No. 1. 95–98. **2727**

Observations were made over a period of four years on the effect of atmospheric conditions on the milk yield of ewes, wind, rain, atmospheric humidity, and variations in temperature being taken into account. The ewes were divided into groups according to age, weight, number of lambs, and normal milk yield.

It was found that the milk yield diminished when the temperature varied and that in certain groups there was a slight increase in yield when the temperature remained constant.—H. G. CIMINO.

ARCHIBALD, J. G. (1944). **Zinc in Cows' Milk.**—*J. Dairy Sci.* **27.** 257–261. **2728**

Zinc oxide was added to the rations of eight cows at the rate of 10 g. daily per cow for a period of three months ; no ill-effects were observed. Analyses of composite two-day milk samples taken from each cow once a month showed that the Zn content of the milk of the cows receiving the Zn supplement was slightly higher than that of a similar number of control animals of the same breed and at a similar stage of lactation. The average values were 5·1 mg. Zn per litre as compared with 3·8 mg. per litre for the controls. Considerable individual variation in the Zn content of the milk was observed, values of 3·8 mg. Zn per litre being found in the milk of cows which had received the Zn supplement for three months, while values as high as 5·8 and 5·3 mg. were found in the milk of control animals.

Details are given of a turbidimetric method for the estimation of Zn.—R. ALLCROFT.

*ROYER, M., CHIARAVALLE, A. M., & ARAMBURU, H. G. (1941). **Plasma Bilirubin Concentration in Different Vascular Territories in Horses.**—*Rev. Soc. argent. Biol.* **17.** 208–212. [Abst. in *Brit. Chem. Physiol. Abstr.* A., III. pp. 92–93. (1942), copied *verbatim.* Signed : J. T. L.] **2729**

Concns. varied between 5 and 30 mg. per l. No differences were found between the arterial and venous blood of a given territory, except that blood coming from the duodenum and jejunum sometimes had a higher concn., which is attributed to reabsorption.

*HUM, I. (1942). **[Tyrosine and Tryptophane Contents of Fibrinogen and Fibrin of Horse, Cattle, and Sheep Blood Plasmas]**.—*Inaug. Diss., Budapest.* pp. 19. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 519]. **2730**

The fibrinogen and fibrin contents of the blood plasma of ten each of horses, cattle, sheep, and pigs were examined, and their tyrosine and tryptophane contents estimated. No essential difference was found in the percentage of fibrinogen or in the tyrosine and tryptophane content of the fibrinogen or fibrin between the various animal species, or between individual animals according to age, weight, and sex differences. —O. CRUSE.

*BIANCO, A. (1942). Contributo allo studio del cosidetto quarto elemento del sangue. **[Study of the So-Called Fourth Blood Element (Kinetocytes of Edelmann)]**.—*Nuovo Ercol.* **47.** 1–22. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 519]. **2731**

EDELMANN (1931) established the presence of elements, which he called kinetocytes, in human blood ; B. has studied similar elements in the blood of many animals, by different methods, and concludes that such elements are disintegration products of blood corpuscles. —O. CRUSE.

*JUHÁSZ, B. (1942). **[Calcium Content of the Wall of the Small and Large Intestines of Horses, Cattle, Sheep, and Pigs]**.—*Inaug. Diss., Budapest.* pp. 20. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 517]. **2732**

The Ca content of the fresh wall of the small intestine was always higher than that of the large intestine. The Ca content of the muscles of cattle and sheep was half that of the intestinal wall. No important variation

could be found in the Ca contents of the walls of the small and large intestines of the different animal species tested. In the dry wall substance, the pig was found to have the highest Ca content and the horse the lowest. The animals which excrete Ca mainly from the intestines show a higher Ca content in the intestinal wall than those which excrete it mainly in the urine.—O. CRUSE.

DAVIES, D. V. (1944). **Observations on the Volume, Viscosity and Nitrogen Content of Synovial Fluid, with a Note on the Histological Appearance of the Synovial Membrane.**—*J. Anat.* **78.** 68–78. 2733

There is little published work dealing with the characters of normal synovial fluid in man and animals. D. gives in tabular form a summary of the literature relating to viscosity and then describes in detail the results of his study of several hundred samples taken by puncture from various joints in cattle between the ages of one and four years.

The tibio-tarsal joint contains a large volume (average, 25 ml.) of colourless or pale straw-coloured fluid, of low viscosity and correspondingly low nitrogen content. The knee joint contains about 10 ml. of fluid, colourless to deep yellow, and of very varying viscosity. The hip joint contains about 10 ml. of fluid, usually deep yellow, and its viscosity is similar to that found in the hock. The fluid in the atlanto-occipital joint is extremely viscous and usually sets to a gel at room temperature.

No significant histological features were observed which might be correlated with the different types of fluid. No evidence was found suggesting special secretory areas in the synovial membrane, and D. supports the view that the synovial fluid is at least in part a dialysate from the blood with the addition of mucin, possibly from the connective tissue. The differences between fluids from various joints may be due to a difference in the properties of the blood synovial fluid barrier.

The volume of synovial fluid present in the joints is far in excess of that needed for lubrication. It has been estimated that a film 50μ thick would suffice for the lubrication of the knee joint. It is probable that the large volume of fluid is necessary for adequate nutrition of the joint and for maintenance of a constant fluid medium in which the articular structures live and respire. In a small series of old milch cows the average volume of fluid in the hock joints was only 10 ml. The joints showed degenerative changes and it may be that an adequate volume of joint fluid is important in maintaining healthy articular structures.

The pads of fat and folds of synovial membrane within joints act as pad oilers to ensure a continuous film of lubricant over the articular surface. The viscosity of synovial fluid is due primarily to its content of mucin, but this polysaccharide may have other functions, such as the regulation of pH.—E. G. WHITE.

TUTT, J. B. (1944). **Parturition in the Thoroughbred Mare.**—*Vet. J.* **100.** 69–80. 2734

The normal phenomena associated with parturition were studied at a Thoroughbred stud in 26 mares in 1942 and 43 mares in 1943.

The first signs of mammary development were noted usually three weeks prior to foaling; the earliest appearance of mammary development was at six weeks before foaling, and the latest, in one mare only, at the time of parturition. Milk secretion commenced when the foal started sucking. Waxing—the appearance of a pearly wax-like bead on the apex of the teat—was not a constant feature. It was seen in the majority of cases, however, and, in 85% of these, parturition followed within 48 hours.

The average duration of pregnancy in 1942 was 341 days and in 1943 it was 354 days. The sex of the foal had no influence on the length of gestation. T. could not support W. L. WILLIAMS' contention that foals approximating 365 days *in utero* are usually ill from sepsis. There was no appreciable correlation between retention of foetal membranes or age of mare and gestation period. T. considers that the length of gestation probably bears no relationship to future breeding prospects, but he states that further data are required on this point.

The symptoms and duration of the three stages of labour are described. In most cases, parturition was completed within two hours and the foetal membranes expelled within another two hours. In mares in which the placenta was retained up to nine hours, no ill-effects were observed. The practice of ligating the umbilical cord was found to be of questionable value. In 40 cases out of 43, one hippomanes was expelled; it was not a definite structure and was thought to represent an accumulation of waste products.

Service at the foal-heat is advised only if the genital tract is found to be healthy. In 39 out of 43 mares, this oestrus commenced within 14 days of parturition, mostly at the ninth and tenth day, and lasted 2–4 days. —D. N. SPRIGGS.

HAMMOND, J., Jr. (1944). **Control of Ovulation in Farm Animals.**—*Nature, Lond.* **153.** 702–704. 2735

A general statement concerning the control of ovulation in farm animals.—N. J. SCORGIE.

SWANSON, E. W., & HERMAN, H. A. (1944). **The Correlation between some Characteristics of Dairy Bull Semen and Conception Rate.**—*J. Dairy Sci.* **27.** 297–301. 2736

A study is reported of the correlation between the conception rate in a dairy herd and the pH concentration, motility and viability in storage of, and the percentage of abnormal sperm in, the semen used. The semen was taken from 23 bulls, fifteen months to thirteen years of age; these bulls represented all phases of fertility from practically sterile to highly fertile. The correlation between conception rate and pH, abnormal sperm, and concentration of sperm was not significant, so that there is little practical value in making such determinations as a routine measure. A highly significant linear correlation was found between conception rate and viability of the sperm in storage at 40°F. A significant curvilinear relationship between motility and conception rate was found. The difference in conception rate with semen which has 45% or more progressively motile sperm, and higher grades of motility was very slight. This study has, therefore, again demonstrated the value of motility rating for detecting semen likely to result in poor breeding efficiency.—N. J. SCORGIE.

SWANSON, E. W., & HERMAN, H. A. (1944). **Seasonal Variation in Semen Quality of some Missouri Dairy Bulls.**—*J. Dairy Sci.* **27.** 303–310. 2737

A study is presented of the monthly variation of the initial motility, volume, concentration, useful storage time, pH, and morphology of the semen of 13 bulls in the University of Missouri herd during three years. The monthly variations in volume, concentration, and percentage of total abnormal spermatozoa were not statistically significant. The most significant seasonal changes in the average semen quality of the bulls studied was a decrease in initial motility and viability and an increase in pH with the onset of cold weather in December. These changes were confined almost entirely to the semen of bulls which were over four years old. These bulls seemed to be affected more

by cold weather than the younger bulls and showed less sexual drive in winter, and it is possible, therefore, that the general lowered physical vigour was reflected in the decreased vitality of their spermatozoa. Since in the young, vigorous bulls no important seasonal effects were observed, it seems probable that season as such may have no important effect upon the semen quality of dairy bulls in Missouri. It is pointed out that the effect of the observed seasonal differences in semen quality upon fertility of bulls used for natural service or for artificial insemination with non-stored semen would probably be insignificant, but that where artificial breeding is practised with stored semen, the effect of extreme weather conditions or other factors adversely affecting the physical vigour of old bulls may be responsible for lowered conception rates.—N. J. SCORGIE.

AYYAR, R. V. (1944). **Preservation of Bovine Spermatozoa.**—*Indian vet. J.* **20.** No. 5. 253–260. **2738**

Results of studies on the semen of one Ongole and two buffalo bulls are given. Most of the semen samples were collected by means of the artificial vagina. Macroscopically, the samples were slimy, yellowish, and milky. pH values ranged from 5·6–6·4. The semen could be preserved in a viable form for at least 12 days by the gradual cooling method. Violent shaking and sudden cooling from room temperature to 5°C. had deleterious effects on motility.—P. BHATTACHARYA.

—. (1944). **Livestock Improvement and Artificial Insemination. Discussion by North England V.M.A.** [Speakers :– MITCHELL, W. M., PICKERING, J. P., HAMMOND, J., PEELE, J. D., MITCHELL, T. M., DENT, L., & CASSELS, J. W.]—*Vet. Rec.* **56.** 210–211. **2739**

A general discussion on artificial insemination, covering the advantages of artificial insemination over natural breeding, organization and personnel at artificial insemination centres, possible repercussions on certain aspects of veterinary practice, selection of bulls for artificial breeding, and the improvement of dairy cattle. —N. J. SCORGIE.

HENDERSON, J. A. (1944). **Artificial Insemination. With special Reference to Scottish Conditions.**—*Vet. Rec.* **56.** 207–209. Discussion p. 209. **2740**

H. discusses certain details of the procedures involved in artificial insemination of cattle, and gives an account of the development and organization of artificial breeding societies in the U.S.A. With regard to the optimum position in the female genital tract for semen deposition, it is stated that no significant difference in the conception results has been found by deposition at any of the following sites :– deep in the cervix, at the bifurcation of the uterine horns, and up one horn on the side of the functioning ovary. [Despite the implication in the title of this paper, there is no reference to conditions supposed to be peculiar to Scotland, nor does the subsequent discussion make it clear whether any such conditions actually do exist.] —N. J. SCORGIE.

TAYLOR, L. W., & LERNER, I. M. (1942). **Breeding for Egg Production.**—*Bull. Calif. agric. Exp. Sta.* No. 626. pp. 48. [Revised]. **2741**

This bulletin reviews the present knowledge of the genetics of egg production, and also shows what may be accomplished by the application of the principles and methods discussed in the text in bringing about rapid improvement in egg production. Genetic factors affecting egg production are discussed in general terms : some of the characters controlling time in production, such as maturity, persistency, and broodiness, are inherited on a basis which makes selection for the desirable genes possible ; other characters, such as pauses occurring during the egg-laying period are less easily interpreted. In a discussion of characters affecting viability, it is pointed out that disease has a tremendous influence on the efficiency of production. A brief consideration is given to the possibility of producing strains of birds resistant to specific diseases ; some success has been achieved at the California Agricultural Experiment Station in breeding strains exhibiting a resistance to neurolymphomatosis and allied conditions. Other items dealt with are :– methods of measuring flock production, characters governing the quality of the eggs, breeding systems, and the relation of genetics to poultry-breeding methods. Data from the station flock are used to demonstrate the application of the principles discussed.—N. J. SCORGIE.

I. ABRAMOWITZ, A. A., MONEY, W. L., ZARROW, M. X., TALMAGE, R. V. N., KLEINHOLZ, L. H., & HISAW, F. L. (1944). **Preparation, Biological Assay and Properties of Relaxin.**—*Endocrinology.* **34.** 103–114. **2742**

II. MARDER, S. N., & MONEY, W. L. (1944). **Concentration of Relaxin in the Blood Serum of Pregnant and Postpartum Rabbits.**—*Ibid.* 115–121. **2743**

III. HISAW, F. L., ZARROW, M. X., MONEY, W. L. TALMAGE, R. V. N., & ABRAMOWITZ, A. A. (1944). **Importance of the Female Reproductive Tract in the Formation of Relaxin.**—*Ibid.* 122–134. **2744**

I. Further investigation of a hormonal substance named "relaxin" [HISAW, 1926], which causes the symphysis pubis of g. pigs to relax, showed that it is distinct from oestrogen and progesterone since active relaxin preparations showed none of the properties of these two hormones. A simple method for preparation of a concentrated extract, with a detectable loss of activity, from sow's corpora lutea is described. An assay method has been worked out and a unit is described as that amount of hormone which will produce relaxation, in six hours, in two-thirds of a group of spayed female g. pigs of 350–800 g. body weight, which have on the four days preceding relaxin dosage received a dose of 0·83 μg. of oestradiol daily.

II. The method of assay of relaxin worked out for material from sow's corpora lutea was found to be suitable for tests upon the concentration of the hormone in rabbit's blood serum. The concentration remained low but detectable until the 12th day after mating, then rose abruptly until about the 24th, when it remained constant until parturition and then abruptly fell within a few hours to an insignificant level. A few determinations indicated that there was a similar relationship between stage of gestation and relaxin concentration for pregnant rabbit's urine.

III. Further studies designed to differentiate between relaxin and progesterone showed that the relaxing action of the former substance was much greater, more rapid, and less enduring than that of the latter. Progesterone was without action upon hysterectomized g. pigs, while relaxin retained its activity. The hypothesis was therefore advanced that secretion of relaxin—the primary causative agent of relaxation of the pelvic ligaments—by the female genital tract is stimulated by progesterone. Further evidence was afforded by the fact that the time required for an injection of progesterone to cause an increase in the concentration of relaxin in the blood of rabbits was comparable with the time required for it to produce relaxation.—RACHEL MARSHALL.

BAUMANN, E. J., METZGER, N., & MARINE, D. (1944). **Mode of Action of Thiourea on the Thyroid Gland of Rabbits.**—*Endocrinology.* **34.** 44–49. **2745**

The administration of thiourea to rabbits caused hyperplasia of one thyroid gland and decrease in its total iodine and thyroxine iodine content as compared

with the other gland which had been removed previously as a control. Injected iodine, as potassium iodide or diiodotyrosine, was not converted by the gland to thyroxine iodine, but was excreted in the urine when thiourea had been given. This was interpreted as further evidence that thiourea inhibits the formation of thyroxine by the thyroid gland.—RACHEL MARSHALL.

LEBLOND, C. P., & GROSS, J. (1943). **Effect of Thyroidectomy on Resistance to Low Environmental Temperature.**—*Endocrinology*. **33.** 155–160. **2746**

Adult rats which were thyroparathyroidectomized two weeks previously, died within a week when kept at temperatures between 0° and 2° C., while normal, parathyroidectomized, and thyroxine-treated thyroidectomized rats survived for several weeks at the same temperatures. Since the thyroidectomized animals lived in the cold for one or several days in good condition before dying, it appears that the high level of metabolism necessary for resisting cold could be reached but not maintained for more than a few days in thyroidectomized animals.

It was also found that the resistance of thyroidectomized animals on exposure to cold was affected by :– (1) the time interval between operation and exposure to cold, as the sooner the animals were exposed to 0°–2°C. after operation the longer they survived, due probably to the retention of some thyroid hormones in the tissues after thyroidectomy ; (2) the body weight, larger animals being more resistant, and (3) the environmental temperature before exposure to cold, as a previous exposure at 33°–34°C. shortened, and a previous adaptation to cold lengthened, the survival.

These results indicate the importance of the thyroid hormone in resistance to cold.—R. ALLCROFT.

See also absts. **2789** (composition of buffalo milk), **2717** (blood regeneration), **2810** (blood transfusion).

POISONS AND POISONING

*TAEGER, H. (1942). Ungelöste Probleme der Bleivergiftung. **[Unsolved Problems of Lead Poisoning].**—*S. B. Ges. Morph. Physiol. München.* **50.** 7–25. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 454]. **2747**

The cerebral symptoms of acute poisoning with tetraethyl lead differ from those of ordinary lead poisoning, but the syndrome of chronic tetraethyl lead poisoning is similar to that of chronic lead poisoning. Chronic lead poisoning may therefore occur with prolonged contact with tetraethyl lead. Treatment of lead poisoning with lime requires careful control and study of the equilibria between calcium, lead, and phosphate. Ca and phosphate should be given in equimolecular proportions. The concentration of lead in the blood appears to vary independently of the Ca and phosphate and the relation of lead to Ca and phosphorus metabolism is still not understood. Milk is a valuable food in the treatment of poisoning, but has no prophylactic value, as it prevents the excretion of absorbed lead. In treatment, the diet should be neutral.—E. BOYLAND.

KOLESNIKOV, N. M., & TUAEV, S. M. (1941). Deĭstvie chetyrekhkhloristovo ugleroda (CCl_4) na zhivotnykh. **[The Effect of Carbon Tetrachloride on Animals].**—*Med. Parazitol., Moscow.* **10.** 584–585. **2748**

Toleration experiments with carbon tetrachloride prepared in the U.S.S.R. were performed on five sheep and four dogs which received 2–4 ml. 1–3 times daily. On P.M. examination the animals showed fatty degeneration of the liver and kidney tissues, also blood extravasation, and pigmentation of endothelium with iron or other pigments.

No changes were observed in control animals which received normal therapeutic doses.—A. MOLDAWSKY.

*SCHMIDT. (1942). Vergiftung von 52 Truppenpferden durch Verfutterung von Ricinussamen. **[Poisoning of Army Horses with Castor Oil Beans].**—*Z. Veterinärk.* **54.** 337–338. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 531]. **2749**

A report on the poisoning of 52 horses given 5 kg. of castor beans in mistake for sweet lupins. Details are given of the nature of the illness and of the lesions found P.M.—O. CRUSE.

ST.-GEORGES, J. (1943). Un cas anormal d'équisétose. **[Equisetum Poisoning in Horses].**—*Rev. d'Oka.* **17.** 220–221. **2750**

An account of the feeding of an aged mare on hay containing 40% of horsetail (*Equisetum*), in order to study its toxicity. The mare remained healthy, but two horses previously fed on the hay had died.—O. C.

COTE, F. T. (1944). **Rape Poisoning in Cattle.**—*Canad. J. comp. Med.* **8.** 38–41. **2751**

Rape poisoning occurs more commonly in years of abnormal amount of moisture and when there are early frosts. Also, rape grown on low, poorly drained land is more dangerous.

There are four distinct groups of symptoms, respiratory, digestive, brain or nervous, and occasionally urinary (red water). Usually an animal exhibits only one group of symptoms ; occasionally those of two or more may be shown.

The P.M. findings vary according to the organs affected. Prophylaxis consists of providing an abundant supply of hay and restricting the amount of rape consumed during the first few days when the animals are on this pasture. Suggestions are made concerning treatment.—P. J. G. PLUMMER.

MOORE, R. M., & CASHMORE, A. B. (1942). **The Control of St. John's Wort (*Hypericum perforatum* L. var. *angustifolium* D. C.) by Competing Pasture Plants.**—*Bull. Coun. sci. industr. Res. Aust.* No. 151. pp. 23. **2752**

Possible control measures for this pest include the use of dark-coloured dairy cattle or black-faced sheep [see DALEY—*V. B.* **8.** 607.], chemical control, biological control by insect pests, or the planting of pine trees to form a canopy and to kill the weed by cutting off exposure to light. These have all been used with a certain amount of success. The experiments described in this bulletin show that the weed can be eradicated by using subterranean clover as a basis for pasture improvement. The best method of control is to sow subterranean clover with either *Phalaris tuberosa* or perennial ryegrass on fallowed land amply supplied with superphosphate.—B. JOHNSTON.

REYNARD, G. B., & NORTON, J. B. S. (1942). **Poisonous Plants of Maryland In Relation to Livestock.**—*Tech. Bull. Md agric. Exp. Sta.* No. A 10. pp. 249C–312C. **2753**

Illustrated notes are provided on the following plants, which are known to have caused poisoning of stock in *Maryland* :– mountain laurel (*Kalmia latifolia*), water hemlock (*Cicuta maculata*), Star-of-Bethlehem (*Ornitholagum umbellatum*), cocklebur (*Xanthium* spp.), sweet clovers (*Melilotus* spp.), black locust (*Robinia pseudacacia*), black nightshade (*Solanum nigrum*), tobacco (*Nicotiana tabacum*), thornapple (*Datura stramonium*), Kentucky coffee tree (*Gymnocladus dioica*), buttercups (*Ranunculus* spp.), common milkweed (*Asclepias syriaca*), horse-chestnut (*Aesculus hippo-*

castanum), castor bean (*Ricinus communis*), bracken (*Pteridium latiusculum*), oak (*Quercus* spp.), privet (*Ligustrum ovalifolium*), alsike clover (*Trifolium hybridum*), box (*Buxus sempervirens*), loblolly pine (*Pinus taeda*), false hellebore (*Veratrum viride*), and various plants containing cyanogenetic glucosides.

The directions set out by the Bureau of Animal Industry for treating animals poisoned with HCN are reprinted. Other sections of the bulletin are devoted to poisoning by fungi, photosensitization from plants, possible stock poisoning due to potassium nitrite from plants, and plants which may cause human skin poisoning. A brief account is given also of nearly 50 species or genera of plants regarded as potential sources of poisoning of livestock. Recently recorded cases of plant poisoning in Maryland livestock are summarized in tabular form under counties and species of animal. —A. N. WORDEN.

STEYN, D. G. (1943). **Poisoning of Animals by Algae on Dams and Pans.**—*Fmg S. Afr.* **18.** 489–492 & 510. **2754**

Since the end of December 1942, a disease has occurred at the Vaaldam in the Orange Free State causing severe losses among cattle and sheep. Dogs also died from it and fish were found dead in the water. All the farms on which the disease occurred were adjacent to the dam. It was shown (a) that algae-infested water was very poisonous, (b) that the fresh, growing algae were poisonous, and that the poison was discharged into the water when they died, (c) that the decomposed algae were less toxic, (d) that boiling reduced the toxicity of the water, and (e) that animals to which the polluted water was given showed the same symptoms and P.M. lesions as cases occurring at the dam.

The algae were identified as *Microcystis flosaquae*. They are favoured by warm, dry and calm weather, sunlight, and broad stagnant stretches of water. The decomposing algae have an obnoxious smell and their colour changes from green to blue and then to dark purple. The algae appear to contain two toxic substances, one affecting the central nervous system and the liver, and the other causing skin lesions.

Cases are of the peracute, acute, subacute, and chronic types. In peracute cases death is sudden with convulsions, or else a rapid general paralysis occurs. In acute or subacute cases the symptoms are similar, but the animals live for a few days or up to two weeks. Jaundice is common. Skin lesions due to photosensitization occur. In chronic cases the animals may live for weeks or months.

At P.M. examination the spleen is found to be enlarged and blood is present in the abdominal cavity. The liver is brittle or flabby. Blood may be found in the intestines. In the less acute cases a yellowish or bloody fluid is found in the serous cavities; the liver is yellow and very soft and brittle, but in chronic cases it may be hard.—E. M. ROBINSON.

SAMPAYO, R. R. L. (1943). **Toxic Action of *Latrodectus mactans*' Bite and its Treatment. Clinical and Experimental Studies.**—*Amer. J. trop. Med.* **23.** 537–543. **2755**

S. states that he has recorded about 300 cases in human beings of bites by the spider *L. mactans* in the provinces of Buenos Aires and Santiago del Estero. Such bites are of frequent occurrence. He records the action of the venom on various species. In the dog, the symptoms include nausea, vomiting, diarrhoea, and, in high dosage, excitability, trembling, and howling. The dog is, however, highly resistant, and the only death recorded was on the fifth day following bites by 50 spiders. The main lesion was broncho-pneumonia, but there was in addition extensive congestion of the abdominal viscera, gastric haemorrhage, and there were petechiae in the terminal portion of the rectum.

The g. pig is very sensitive to the bite of *L. mactans*. Of 16 g. pigs receiving a single bite, eight died within 24 hours; eight receiving two bites died within the same time. Thirteen of the animals which died were acutely affected, with intense nervous symptoms and lethal bronchospasm; the remaining three had initial nervous symptoms and paresis, but few respiratory symptoms, and made an apparent recovery to die later. In 98 g. pigs injected subcutaneously with macerated total cephalothorax, 50% of those given ½ cephalothorax and all of those given ¾ cephalothorax died. 1–1½ macerated poison glands subcutaneously or ½ intravenously killed 50% of g. pigs, and 1 gland intracerebrally killed 100%.

Rats are more resistant. 50% of rats receiving 1–4 bites died, usually on the third day. Fifteen glands intravenously were necessary to kill. 75% of immature rats were killed by 1 gland intraperitoneally. The white mouse is also relatively resistant, 0·032 ml. per mouse of a suspension containing eight cephalothoraces per ml. being necessary to produce a 100% lethality. A rabbit weighing 2,300 g. showed no symptoms after a single bite.

In man, there is a short latent period following the bite, after which alarming symptoms develop rapidly. These are described. Treatment is advocated with hyperimmune serum obtained from horses injected with a saline suspension of triturated cephalothorax of *L. mactans*.

The venom is partially destroyed when heated for 15 min. at 50°C. and is completely destroyed by the same length of treatment at 60°C.—A. N. WORDEN.

See also absts. **2728** (non-toxicity of zinc oxide for cows), **2818** (Se poisoning in S. Dakota, plant poisoning in Colorado, Florida, New Hampshire), **2779** (phenothiazine anaemia).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

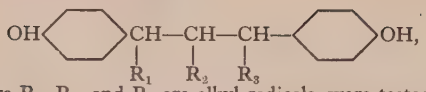
ALBERT, A., FALK, J. E., & RUBBO, S. D. (1944). **Antibacterial Action of Arsenic. [Correspondence].** —*Nature, Lond.* **153.** 712–713. **2756**

Using the technique previously described [see *V. B.* **12.** 615.] in which the test organisms were *Clostridium welchii*, *Streptococcus haemolyticus* A, *Staphylococcus aureus*, *Bacterium coli*, and *Proteus vulgaris*, the authors demonstrated that arsenoxide (*m*-amino-*p*-hydroxyphenylarsenoxide) behaves as a potent antibacterial of the same order of activity as the acridines and the mercurials, and that it is as easily inactivated by a typical thiol compound as are mercurials. The pentavalent arsenical acetarsol (*m*-acetylamino-*p*-hydroxyphenylarsonic acid) was quite inactive and the arsenobenzene (neoarsphenamine) showed only slight and limited activity.

In the authors' experience, this hitherto unsuspected antistaphylococcal action of arsenoxide is inferior only to that of penicillin, ethyl mercurithiosalicylate, and crystal violet.—R. ALLCROFT.

HEINEMANN, B. (1944). **The Bactericidal Activity of Some Di-(Hydroxyphenyl) Alkanes.**—*J. Lab. clin. Med.* **29.** 254–258. **2757**

Compounds of the type



where R_1, R_2, and R_3 are alkyl radicals, were tested for bactericidal activity against *Staphylococcus aureus* and *Salmonella typhi*. Bactericidal activity against *Staph. aureus* increased with increasing length of the alkyl chains and one long straight chain in the R_3 position was more bactericidal than a distribution of the same number of carbon atoms in chains in the R_1 and R_3 positions, a branched chain in the R_2 position, or a phenyl group in the R_3 position. Bactericidal activity towards *S. typhi* was maximal with an R_3 of four carbon atoms' chain length. Substitution of the hydroxyl groups in other positions in the phenyl rings did not affect the bactericidal activity, but methylation of the hydroxyl groups completely destroyed the activity of the compounds.—RACHEL MARSHALL.

BROWN, W. E., WILDER, V. M., & SCHWARTZ, P. (1944). **A Study of Oils Used for Intramuscular Injections. A Study of the Physical, Chemical, and Biologic Factors.**—*J. Lab. clin. Med.* **29.** 259–264. **2758**

Sesame, maize, peanut, and cottonseed oils were compared as to their suitability as vehicles for substances injected intramuscularly. While variations due to the method of manufacture, such as the use of preservatives, caused differences between samples, quite apart from the nature of the oil, the first two oils appeared to be more suitable than the last two on account of :– (a) their physical and chemical properties, (b) their non-sensitizing activity towards human patients, and (c) their more rapid disappearance from the sites of injection in animals and their slighter irritating action.—RACHEL MARSHALL.

—. (1944). **The Wider Distribution of Penicillin.**—*Brit. med. J.* July 22nd. 118–119. **2759**

Four types of wounded in France have been given full doses of penicillin intramuscularly, *viz*, those with laceration or muscle destruction, those with contaminated wounds or wounds containing foreign bodies, those with interfered blood supply to a limb, and those who have been exposed for a long period. It is pointed out that penicillin is not self sterilizing but may easily become contaminated with *Pseudomonas pyocyanea*. It should only be used on suitable cases and with the advice of a bacteriologist. Details are given of the circumstances in which penicillin is available for civilian use.—E. BOYLAND.

MCKEE, C. M., RAKE, G., & MENZEL, A. E. O. (1944). **Studies on Penicillin. I. Production and Antibiotic Activity.**—*J. Immunol.* **48.** 259–270. **2760**

RAKE, G., MCKEE, C. M., HAMRE, D. M., & HOUCK, C. L. (1944). **Studies on Penicillin. II. Observations on Therapeutic Activity and Toxicity.**—*Ibid.* 271–289. **2761**

I. Different strains of *Penicillium notatum* produce different amounts of penicillin, although all strains are derived from FLEMING's original mould. Penicillin will inhibit the growth of dense cultures of organisms, the growth of which cannot be inhibited by moderate concentrations of sulphathiazole. Penicillin also differs from sulphathiazole in being bactericidal. Aqueous solutions of penicillin are most stable at pH 5·6 at 0°C. as was shown by CLUTTERBUCK, LOVELL & RAISTRICK in 1932. Penicillin is perfectly stable in the dry form stored *in vacuo*.

II. The *in vitro* assay of activity gives an accurate measurement of the therapeutic efficacy of penicillin. Penicillin is rapidly excreted in the urine, but it can be detected in the urine of mice eight hours after the injection of 100 Oxford Units. Strains of pneumococci which are resistant to sulphanilamide are susceptible to penicillin. Strains of staphylococci, pneumococci, and streptococci cultivated for long periods in the presence of penicillin become resistant to penicillin. This increased resistance is accompanied by loss of virulence. It is confirmed that penicillin is much less toxic for animals than other antibiotic substances.—E. BOYLAND.

RANTZ, L. A., & KIRBY, W. M. M. (1944). **The Action of Penicillin on the Staphylococcus in Vitro.**—*J. Immunol.* **48.** 335–343. **2762**

Penicillin causes lysis of *Staphylococcus aureus in vitro*. Different strains of staphylococci vary by more than a hundredfold in their resistance to penicillin, *i.e.*, as measured by the concentration of penicillin required to inhibit growth. The inhibition appears to be independent of the nature of the media, but over a certain range it is closely connected with concentration of penicillin.—E. BOYLAND.

MENZEL, A. E. O., WINTERSTEINER, O., & HOOGERHEIDE, J. C. (1944). **The Isolation of Gliotoxin and Fumigacin from Culture Filtrates of *Aspergillus fumigatus*.**—*J. biol. Chem.* **152.** 419–429. **2763**

It is shown that culture filtrates of *A. fumigatus* grown on Czapek-Dox medium produce two antibiotically active substances :– (1) a neutral, nitrogen- and sulphur-containing compound melting at 195°C., which was identified as gliotoxin ; this substance was previously isolated from culture filtrates of *Gliocladium fimbriatum* ; (2) a weakly acidic substance, melting at 200°C. and containing no N or S, which represents a pure form of fumigacin, an antibiotic substance previously reported by WAKSMAN *et al.* [*V. B.* **14.** 210]. It is now demonstrated that the crystalline material previously described by WAKSMAN *et al.* is a mixture of fumigacin and gliotoxin. From the chemical and bacteriological properties of fumigacin it appears to be identical with helvolic acid recently isolated by CHAIN *et al.* [*V. B.* **14.** 69.] from the same source.

Fumigacin is effective primarily against Gram-positive bacteria and although its potency per mg. is considerably less than that of penicillin, gramicidin, tyrocidin, or gliotoxin, it has the prerequisites of an effective therapeutic agent.—R. ALLCROFT.

*PLETTENBERG, W. (1942). Klinische Versuche mit Albucid bei Rindern. **[Clinical Tests of the Value of Albucid for Cattle].**—*Inaug. Diss., Berlin.* pp. 42. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 530]. **2764**

Twenty-five cases of various [unnamed] diseases in cattle were treated with large doses of albucid [sulphacetamide] mixed in the food, either in the form of powder or as a 30% solution. Favourable results were obtained in puerperal infections.—O. CRUSE.

LITTLE, R. B. (1943). **Gramicidin and Tyrothricin Therapy in Chronic Streptococcic Mastitis.**—*Rep. N.Y. St. Ass. Milk Sanit., 1942.* pp. 107–117. 1 appendix. Discussion pp. 117–120. [Also appeared in *J. Milk Technol.* **6.** 335–341]. **2765**

A review is given of gramicidin and tyrothricin treatment for chronic streptococcal bovine mastitis. The results published to date by workers in this field are summarized. Of a total of 583 quarters treated by various workers, 83% are claimed to have been cured. This proportion is regarded as satisfactory and is stated to be higher than that resulting from any other treatment. No new facts emerge concerning gramicidin or tyrothricin.—D. D. OGILVIE.

SMITH, M. I., & EMMART, E. W. (1944). **The Action of Penicillium Extracts in Experimental Tuberculosis.** —*Publ. Hlth Rep., Wash.* **59.** 417–423. **2766**

Commercial preparations of penicillin did not inhibit the growth of human tubercle bacilli in glycerin broth or on the chorioallantoic membrane of chick embryos. Extracts of *Penicillium cyclopium* also had no effect, but crude extracts of *P. notatum* had tuberculostatic action. Extracts of *P. notatum* prevented death in g. pigs infected with tubercle bacilli, while *P. cyclopium* had no therapeutic action.—E. BOYLAND.

FEATHERSTON, W. P. (1944). **Effect of Inorganic Iodides on Tubercles.**—*Amer. Rev. Tuberc.* **49.** 549–550. [Spanish summary]. [Author's English summary copied *verbatim*]. **2767**

Tubercles formed in the omentum of the guinea pig as the result of the intraperitoneal injection of heat-killed tubercle bacilli are not affected by large doses of inorganic iodides given over a period of twenty-five days.

BERTHELON, M., & VALIN, R. (1943). L'actinomycose cutanée des bovidés. Traitement par le para-aminobenzène-sulfonyl-thiourée. [**Cutaneous Actinomycosis in Cattle. Treatment with *p*-Aminobenzene Sulphonyl Thiourea**].—*Bull. Acad. vét. Fr.* **16.** 45–49. **2768**

Cutaneous actinomycosis is said to be rare. The authors report the detailed pathology of such infection in a heifer and refer to three other cases. The lesions affected the costal area. There was intense pruritus over the lesion, and the affected area was indurated without oedema or pain; there was some depilation. Because of the scarcity of iodides, the animals are stated to have been cured by treatment with *p*-aminobenzene sulphonyl thiourea (fontamide), 20 ml. being given daily in the morning, and 10 ml. in the evening intravenously in a 33% solution, and 15 g. in the drinking water. Within ten days, the animal received 300 ml. intravenously and 150 g. *per os*.—S. JAMIESON.

BRION, A., & GUILHON, J. (1943). Un cas d'actinomycose du chat traité par le para-aminobenzene sulfamido-pyridine. [**Treatment of Actinomycosis in a Cat with Sulphapyridine**].—*Bull. Acad. vét. Fr.* **16.** 95–96. **2769**

A case of actinomycosis in a cat is described. Lesions first appeared when the animal was seven months old, taking the form of skin abscesses which appeared at regular intervals of two weeks to a month. When the animal was examined at the age of six years, there were five active lesions on one side of the body. The skin in the centre of each lesion was hard and adhered to the underlying tissues; from each lesion a fistula exuded pus. The animal otherwise appeared healthy. After treatment with 1 g. of sulphapyridine daily for 26 days, all abscesses disappeared, the skin became supple, and the hair grew again. Autopsy later showed complete regression of all lesions.
—D. D. OGILVIE.

BENBOW, E. P., Jr., SMITH, D. T., & GRIMSON, K. S. (1944). **Sulfonamide Therapy in Actinomycosis. Two Cases Caused by Aerobic Partially Acid-Fast Actinomyces.**—*Amer. Rev. Tuberc.* **49.** 395–407. [Spanish summary]. [Part of authors' English summary copied *verbatim*]. **2770**

Approximately 90 per cent of the clinical cases of [human] actinomycosis are caused by *Actinomyces bovis*. Beginning in 1938, 13 reports have appeared in the literature indicating that the sulfonamides are very effective in the treatment of this disease. In most instances the sulfonamides were given along with potassium iodide.

YORKE, WARRINGTON. (1944). **The Therapeutic Action of the Aromatic Diamidines in the Treatment of Protozoal Infections of Man and Stock.**—*Brit. med. Bull.* **2.** 60–64. **2771**

Following the discovery of the direct trypanocidal action of synthalin, a large number of guanidines, isothioureas, amidines, and amines with alkyl and alkylene chains were examined for trypanocidal action. Certain of the diamidines were found to be very active, especially 4 : 4′-diamidino stilbene (stilbamidine), 4 : 4′-diamidino diphenoxypropane (propamidine), and 4 : 4′-diamidino diphenoxypentane (pentamidine).

Laboratory tests showed that these compounds exerted a powerful curative action on *Trypanosoma rhodesiense*, *T. equinum*, *Leishmania donovani*, and *Babesia canis* infections, a less powerful action on *T. congolense* infection and on malaria of man and monkeys, and no effect on *T. cruzi*, *Spirochaeta recurrentis*, or *Spirillum minus* infections.

Clinical trials in African sleeping sickness and leishmaniasis in man and in babesiasis in animals are described. Generally good results were obtained. In babesiasis of animals the aromatic diamidines were of considerable value. Propamidine and diamidinodiphenyl ether are probably best for the treatment of babesiasis of dogs, since they are less toxic than stilbamidine. None of the compounds had any effect on *Theileria* or *Anaplasma* infections of animals.

No serious cases of acute toxicity were reported, but there were many instances in which transient symptoms of toxicity were noted. Fatty degeneration of the liver in dogs and cattle occurred frequently, and in dogs peculiar nervous symptoms were occasionally produced.

[Since this paper was written, a case of acute toxicity in man from pentamidine administration has been recorded (see MCCOMAS & MARTIN—*V. B.* **14.** 358].
—D. D. OGILVIE.

FUNKE, A., BOVET, D., & MONTEZIN, G. (1943). Sur quelques dérivés de l'éthylènediamine à action trypanocide. [**Trypanocidal Action of Certain Derivatives of Ethylenediamine**].—*Ann. Inst. Pasteur.* **69.** 358–371. **2772**

The production of 39 derivatives of ethylene diamine is described. Eight of these substances were found to be curative to mice infected with *Trypanosoma brucei* when given subcutaneously, and in some cases when given orally. Eight others caused the temporary disappearance of trypanosomes from the peripheral blood, and 23 were entirely inactive. The eight curative substances were all compounds consisting of a benzene nucleus and ethylene diamine chain. It seems that the trypanocidal action is dependent on the presence of an ethylene diamine chain in the molecule, but a second substitution in the benzene nucleus appears to play an essential role. The substitution of the following radicals in the *para* position produced active substances. —C_2H_5, C_3H_7, *i*-C_3H_7, *i*-C_4H_9, C_5H_9, C_6H_{11}, $CH_2.C_6H_5$, and Cl. Some indication that the benzene nucleus may not be essential is given by the fact that a derivative of citronellol was sufficiently active to cause temporary clearing of the peripheral blood.

Tables are given showing the curative action on *T. brucei* infections in mice of (*p*-*n*-isopropylbenzylamino)-1 amino-2 ethane which is active when administered orally and (*p*-isopropylbenzylamino)-1 amino-2 ethane which is active administered subcutaneously, but cured only two of three mice treated when given orally.
—U. F. RICHARDSON.

*HEGNELL, N. (1942). Fentiazin mot coccidiosis. [**Treatment of Coccidiosis with Phenothiazine**].—*Svensk VetTidskr.* **47.** 349. [Abst. from abst. in *Maanedsskr. Dyrlaeger.* **55.** 130]. **2773**

Phenothiazine has been used with success in the treatment of coccidiosis in rabbits, the minimum effective and non-toxic doses being 0·25 g. for rabbits under three months of age, 0·5 g. for those 3–6 months old, and 1·0 g. for full-grown rabbits, the drug being mixed in the food or, for animals too ill to feed, suspended in milk. Treatment is repeated after 1–2 weeks or earlier in severe cases.—J. E.

*Fabiani, G., Butori, P., & Dalbies, F. (1942). Traitement du paludisme à Plasmodium falciparum par une médication sulfamidée. **[Treatment of *P. falciparum* Infection by Sulphonamides]**.—*Bull. Soc. Path. exot.* **35.** 388–390. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **143.** 315]. **2774**

Sulphathiazole gives good results in the treatment of [human] malaria due to *P. falciparum.* The treatment causes the disappearance of the schizonts and the clinical symptoms associated with them (*i.e.* fever, swelling of spleen, anaemia). The gametes are unaffected. An agent such as plasmoquine which will cause the gametes to disappear must be employed to prevent relapses.—C. Horton Smith.

Jeans, W. D., Jeffrey, J. S., & Gunders, K. (1944). **Penicillin and Smallpox. Report of Four Cases.**—*Lancet.* **247.** 44–45. **2775**

Thirty-seven cases of smallpox occurred in a general hospital in Italy. Two men died quickly while most recovered in a few days. In four men, however, the disease was progressive and they became covered with pustular vesicles from which *Staphylococcus aureus* was cultured. Treatment with sulphathiazole had no effect. Subcutaneous injection of penicillin produced pronounced improvement in three of the cases in 24 hours and complete recovery in four days. One of these cases had never been vaccinated. Penicillin treatment had no effect on a fourth patient in whom the smallpox was complicated by dermatitis and this man died on the 13th day of the eruption.—E. B.

Andrewes, C. H., van den Ende, M., King, H., & Walker, J. (1944). **Substances Chemotherapeutically Active against Typhus Rickettsiae.**—*Lancet.* **246.** 777–781. **2776**

A technique is described for the quantitative study of typhus infection in mice by counting the discrete lung lesions produced by intranasal injection of dilute rickettsial suspensions. V147 (*p*-sulphamidobenzamidine hydrochloride) was found to prevent or greatly reduce the size and number of the pulmonary lesions, and it prevented death in mice receiving heavy doses of typhus virus. The corresponding amidoxine, V186, was found to be as active as V147, and ten related compounds also showed activity, but the chemotherapeutic property is highly specific in that any considerable modification of the molecule at once abolishes all activity.

The drugs did not give satisfactory results in the treatment of typhus in g. pigs or in man.

They had no appreciable effects on the viruses of influenza or of lymphogranuloma venereum.—U. F. R.

Zhukova, N. N. (1941). Impregnatsiya marli insektitsidami dlya otpugivaniya mukh. **[Impregnation of Gauze with Insecticides for the Repelling of Flies]**.—*Med. Parazitol., Moscow.* **10.** 567–569. **2777**

Dry gauze impregnated with *n*-methyldiphenylamine or chloropropyldiphenylamine prevented oviposition on meat covered with it. The repellent effect of these substances was less pronounced if the meat was placed in a moist atmosphere. Gauze covered with 5% "bisethylksantogen" ointment also prevented oviposition.—A. Moldawsky.

Krupski, A., & Leemann, W. (1943). Phenothiazin gegen Darmparasiten der Haustiere. **[Phenothiazine for the Treatment of Intestinal Parasitism of Domestic Animals]**.—*Schweiz. Arch. Tierheilk.* **85.** 234–239. **2778**

Case records are given of a number of cases of parasitic disease which were treated with phenothiazine. Nine horses were treated with doses ranging from 80 to 300 g. In most cases a watery suspension of the drug was given by stomach tube, but in one case the drug was administered in bolus. No toxic reactions were observed in any of these cases, and faecal examinations after treatment showed that strongyle eggs had disappeared from the faeces, although *Gastrophilus* larvae remained unaffected. A single cow was treated with 150 g. of phenothiazine; after dosage the animal developed a staring coat and lost its appetite, but these symptoms had disappeared the next day and the treatment was effective in removing gastro-intestinal worms. A goat, not clinically affected with parasitic gastroenteritis, but having a moderately high egg count, was dosed with 14 g. of phenothiazine. Faecal examination following treatment showed there to be no worm eggs present. Thirty-five hens affected with *Capillaria* were each treated with 0·5 g. of phenothiazine in a gelatin capsule. The dose was well tolerated and the birds completely recovered. Two sheep, carrying *Moniezia expansa,* were given 19 g. and 13 g. of phenothiazine respectively without any toxic effect. According to the report of the owner, tapeworm segments were not seen in the faeces after treatment. A young cat, infected with *Taenia crassicollis* [= *T. taeniaeformis*], was given 0·8 g. of phenothiazine in two gelatin capsules. About 30 min. after dosing, the cat showed incoordination and weakness and later began to vomit. Immediate treatment with liquid paraffin was given, and there was apparent improvement the next day, complete recovery following gradually.

It is concluded that in horses, sheep, hens, and goats, 0·5 g. of phenothiazine per kg. body weight may be given without any toxic symptoms. 1 g. per day may be given to hens without harm. In the bovine, however, a dose slightly less than 1 g. per kg. body weight induced toxic symptoms, and severe toxic symptoms were observed in the cat following administration at the rate of 0·4 g. per kg. body weight. The authors state that accounts in the literature and their own most recent experience indicate that doses as high as 0·5 g. per kg. body weight are not necessary, and a dose of about 50 g. for the horse is quite effective.

—T. E. Gibson.

Collier, H. B., & Mack, G. E., Jr. (1944). **Vitamin B and Phenothiazine Anaemia in Dogs.**—*Canad. J. Res.* Sect. E. **22.** 1–11. **2779**

5 g. of phenothiazine per kg. body weight given to a dog over a period of several days produced a definite anaemia, of the same haemolytic type as has been observed in treated horses. Phenothiazine anaemia in a bitch was intensified by feeding a vitamin B deficient diet, whereas the deficient diet did not modify the degree of haemolysis in another treated dog. The administration of supplements of the vitamin B complex to dogs dosed with phenothiazine and receiving normal diets did not prevent haemolytic anaemia, but it was noted that so-called "Heinz bodies" (small dense bodies attached to the erythrocytes, and characteristic of certain anaemias) were suppressed and the reticulocyte response was stimulated. It is suggested that the vitamin B complex, probably, more specifically, the suggested anti-anaemia factor, plays an essential role in stimulating erythropoiesis and that it is advisable to administer

adequate amounts of the vitamin B complex in cases of phenothiazine anaemia.—P. J. G. PLUMMER.

BRITTON, J. W., & MILLER, R. F. (1944). **The Practical Application of Anthelmintic Medication of Lambs.**—*J. Amer. vet. med. Ass.* **114.** 270–272. 2780

A comparative test was carried out to determine the efficiency of seven different anthelmintic treatments for sheep. 438 lambs were used in the experiment and all had been kept since birth on a 1 : 15 phenothiazine-salt mixture. On June 19th they were divided into eight groups which were weighed and treated, representative faecal samples being taken from five lambs in each group. The lambs of the different groups were treated as follows :– group 1, no treatment (control) ; group 2, 3 oz. of copper sulphate and nicotine sulphate mixture ; group 3, 5 ml. of tetrachlorethylene ; group 4, 8 g. of phenothiazine in gelatin capsule ; group 5, 15 g. of phenothiazine as a drench ; group 6, a 13·5 g. phenothiazine pellet ; group 7, continual access to a 1 : 15 mixture of phenothiazine and ground salt ; group 8, continual access to a 1 : 10 mixture of phenothiazine and ground salt. On July 22nd the dosing of groups 2 to 6 was repeated and faecal samples were again taken from all groups. On August 20th the lambs of all groups were weighed, the fat lambs sorted out, faecal samples taken, and the number of dead lambs recorded. It was calculated that the lambs of group 7 consumed 1 oz. of phenothiazine per head and those of group 8, 2 oz. per head during the two months' experimental period. With the exception of the lambs treated with tetrachlorethylene, several of which crushed capsules in their teeth, none of the animals showed any toxic symptoms. Of all the treatments used, the phenothiazine-salt mixtures were the easiest to administer ; the individual dosing required by all the other forms of treatment greatly increased the labour involved. The effectiveness of the treatment, whether based on egg counts, weight gain, percentage of fat lambs, death loss, or profit to the feeder, significantly favoured the 1 : 10 phenothiazine-salt mixture. Copper sulphate and nicotine sulphate mixture and all forms of phenothiazine treatment except the administration of 8 g. in capsule gave better results than the controls, whilst the lambs of the tetrachlorethylene group were the poorest in all respects. The authors discuss these findings and compare them with the results of other authors. They conclude that the 1 : 10 phenothiazine-salt mixture is the most nearly perfect anthelmintic for sheep that has yet been discovered.—T. E. GIBSON.

*SCHÜTZLER, G. (1943). Erfahrungen mit "Tetra-Spezial" zur Behandlung des Spulwurmbefalles beim Pferde. [**"Tetra-Spezial" for Horse Ascarids**].—*Berl. Münch. tierärztl. Wschr.* pp. 74–75. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 91]. 2781

"Tetra-Spezial", a proprietary remedy containing tetrachlorethylene, is effective against ascarids of the horse when given at a dosage rate of 10 ml. per cwt. body weight. It is administered as a watery emulsion by the stomach tube after 24 hours' starvation, and no purgative is given. The drug is contra-indicated in constipated animals or those affected with intestinal catarrh.—T. E. GIBSON.

BERRY, H. (1944). **Antibacterial Values of Ethylene Glycol Monophenyl Ether (Phenoxetol).**—*Lancet.* **247.** 175–176. [Author's summary copied *verbatim*]. 2782

Tests of the bacteriostatic and bactericidal values of ethyleneglycolmonophenylether, for which the name "phenoxetol" is suggested, showed that *Ps. pyocyanea* is particularly sensitive to it.

The compound might be used against pyocyanea infection in wounds, perhaps in conjunction with other antiseptics such as penicillin, the acridine compounds, the quaternary ammonium compounds and the sulphonamides, which have low bacteriostatic values against *Ps. pyocyanea.* Phenoxetol was found to be compatible with these other antiseptics.

GOUGH, J., BERRY, H., & STILL, B. M. (1944). **Phenoxetol in the Treatment of Pyocyanea Infections.**—*Lancet.* **247.** 176–178. [Authors' summary copied *verbatim*]. 2783

Phenoxetol was used in the treatment of *Ps. pyocyanea* infection of wounds.

Daily application of a 2·2% solution in water eliminated the infection in some cases and reduced it in others.

The treatment resulted in clinical improvement in the wounds despite the persistence of other organisms.

The investigation was mainly concerned with surface wounds associated with skin loss. The treatment appears to be of value in the healing of such wounds and their preparation for grafting.

*PELI, I., USUELLI, F., ZAVAGLI, V., & ZEETTI, R. (1941). Gli ossicloruri elettrocitici "*Amuchina Z*" ed "*Antisapril*" nella pratica veterinaria. [**The Electrolytic Oxychlorides "Amuchina Z" and "Antisapril" in Veterinary Medicine**]. pp. 71. Rome. [Abst. from abst. in *Jber. Vet.-Med.* **70.** 464]. 2784

This monograph has four parts each by a different author. Part 1 by USUELLI deals with "Amuchina Z"—a neutral solution containing active chlorine. When added to the extent of 2% to the drinking water of g. pigs, it produced no ill effects and caused an increase in the weight of the animals, possibly by inhibition of harmful organisms in the gut. When large doses were given to rabbits, harmful effects on digestion, pregnancy, and the blood were observed, and protein was excreted in the urine.

ZAVAGLI describes the disinfecting action of "Amuchina Z" and "Antisapril" on cells and viruses. "Antisapril" appears to be the more potent antiseptic on the viruses and bacteria which were examined.

ZEETTI tested the preparations on a larger variety of organisms and found "Antisapril" to be more active. The lethal action on spores was slow. Both preparations accelerated the healing of experimental wounds in rabbits and g. pigs.

PELI discusses the applications of "Amuchina Z" in the treatment of puerperal metritis in cows. Irrigation with 4–6 litres of 3–5% of the preparation cured 23 out of 30 cases treated. The material appeared to be non-irritant to the mucosa of the uterus or vagina even when left in the uterus. The irrigation produced immediate improvement in the condition of most of the treated animals.—E. BOYLAND.

See also absts. **2811** (patulin), **2817** (treatment of anaplasmosis), **2701** (of post-arsphenamine jaundice), **2817** (warble treatment), **2748**, **2817** (anthelmintics).

HYGIENE AND PUBLIC HEALTH

—. (1944). **Great Britain. Defence Regulation 55G. Restriction on the Supply of Raw Milk in Certain Areas. Heat-Treated Milk (Prescribed Tests) Order, 1944.**—*Circ. Minist. Hlth, Lond.* No. 31/44. pp. 2. [1d.] 2785

Under the provisions of this Regulation, within

certain specified areas, milk may not be described as heat-treated milk, sterilized milk or pasteurized milk or given "any other description so closely resembling any of these descriptions, as to be calculated to deceive" unless it has satisfied the phosphatase test for adequate heat treatment and the methylene blue test for keeping quality. Details are set out for the conducting of these tests. Additional instructions to those contained in the Milk (Special Designations) Regulations relating to the methylene blue test are that a milk sample must be kept at atmospheric shade temperature both in transit and at the laboratory until between 9 a.m. and 10 a.m. on the morning following the day on which it was taken, *i.e.* under conditions approximating as nearly as possible to those prevailing in a household kitchen.—J. C. B.

HECKE, F. (1941). Die Danziger Milchüberwachung und ihre Bedeutung für die Bang- und Tuberkulosebekämpfung. **[Milk Control in Danzig and its Importance in Control of TB. and Brucellosis].**—*Berl. Münch. tierärztl. Wschr.* Feb. 7th. 61–65. **2786**

The pasteurization of milk was, in general, compulsory in the pre-war Free State of Danzig (including Zappot). Farmers wishing to sell raw milk obtained a much higher price by fulfilling certain conditions; these conditions included veterinary supervision with clinical examinations and blood tests of cows and laboratory examination of the milk. In 1939, 5% of animals tested were infected with brucella, but only 2·4% of infection was found in milk samples; only 0·5% of the milk samples tested contained tubercle bacilli.—O. CRUSE.

*TULLBERG, K. (1942). Mjölkkontroll och smittsam kastning. **[Milk Control and Bovine Brucellosis].**—*Svensk VetTidskr.* **47.** 195. [Abst. from abst. in *Maanedsskr. Dyrlaeger.* **55.** 127]. **2787**

This is a description of a rapid slide agglutination test using milk samples and stained antigen, "Behring Abortus-Bang test paste" being used as the antigen. The method is useful for tracing the origin of infection in bulk milk and thence tracing back to the infected herd and cow or cows. For precise investigations within a herd, the slow tube test with blood remains the most reliable.—J. E.

CORBETT, W. J., & TRACY, P. H. (1943). **The Incidence of Oxidized Flavor in the Milk of Individual Cows Within One Herd.**—*J. Dairy Sci.* **26.** 1095–1106. **2788**

Of 538 individual milk samples collected from 138 cows during a six-months' period, 1·48% and 10·01% had an oxidized flavour after storage for one and three days respectively. The addition of a metallic compound (copper sulphate) increased the incidence to 78·5% and 91·7% respectively. The influence of such factors as breed, age, period of lactation, and milk and fat yield was also studied, but the underlying cause of the oxidized flavour remained obscure.—M. L. LEVI.

GHOSH, N. K., & ROY, B. K. D. (1941). **On the Composition of Buffalo Milk and the Detection of Adulterated Samples Passed as Cow Milk.**—*Indian med. Gaz.* **76.** 279–282. **2789**

The Pure Food Acts of Assam and other neighbouring provinces have decreed that buffalo's milk shall have a minimum specific gravity of 1·028 at 15·5°C., a 9% solids-not-fat content, and 6% fat. Since, after adulteration, buffalo's milk may be sold as cow's milk, analyses of both kinds of milk have been made. The data show that many samples of buffalo's milk can be easily adulterated and passed as genuine cow's milk. The estimation of lactose facilitates the detection of diluted buffalo's milk sold as cow's milk.—D. A. MUNRO.

RICHART, A. (1943). Nouvelles possibilités prophylactiques contre certaines maladies animales dans l'organisation actuelle du ravitaillement en viande. **[Control of Certain Diseases of Meat Animals].**—*Bull. Acad. vét. Fr.* **16.** 125–128. **2790**

The institution in France of centralized slaughtering of animals intended for human consumption, with the resultant abolition of the traffic of animals through many dealers, has rendered the tracing and location of disease much easier. It has also offered new means of ascertaining the correct geographical distribution of disease and afforded new possibilities in their control. —S. JAMIESON.

—. (1943). Ampliación del articulo 17 del reglamento de importación y exportación. **[Uruguay: Amplification of Article 17 of the Law of June 8th, 1934, Controlling the Import and Export of Animals].**—*Bol. mens. Direcc. Ganad., Montevideo.* **27.** 435–436. **2791**

This new decree provides for the inspection, on board, of animals and birds imported into Uruguay.

All birds imported must be accompanied by a certificate, viséd by the Uruguayan Consul in the country of origin, stating that they are healthy and that there was no infectious disease in the establishment from which they came. Birds which are apparently healthy when inspected on board will be kept in quarantine for three days and submitted to tuberculin and pullorum tests, with the exception of those which are intended only for slaughter and immediate consumption. Birds which react positively to either test will be re-embarked or destroyed and no compensation will be made.—MILLER WATSON.

*WUNDRAM, G. (1942). Zur Frage, ob Sumpfbiber Fleischnahrung aufnehmen? **[The Suitability of the Flesh of the Coypu for Human Consumption].**—*Tierärztl. Rdsch.* p. 392. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 137]. **2792**

Coypu meat is sold as a delicacy in Central Europe, and the question arises as to whether or not it may be infected with *Trichinella*. Examination of the meat proved negative, but W. made enquiries about the feeding of the animals and found that, in addition to fresh grass, raw beef and pork were given. There is, therefore, some danger that coypu meat may be infected with *Trichinella*.—T. E. GIBSON.

See also absts. **2677, 2678** (beef tapeworm in France and Holland), **2683** (trichinosis).

TECHNIQUE AND APPARATUS

HALLBERG, V., & REENSTIERNA, J. (1941). **A New Method for Staining Tubercle Bacilli.**—*Acta med. scand.* **108.** 12–17. [In English]. **2793**

This method was demonstrated by H. before the Swedish Association of Pathologists in 1939. The method was first used for staining sputum samples from tuberculous patients, but it can be used also for paraffin sections. The solutions used are:—(1) Saturated solution of Nachtblau (Grübler) in 95% alcohol, 10 ml.; liquefied phenol, 2·5 ml.; 10% KOH, 0·2 ml.; distilled water, 100 ml. The KOH is dissolved in water, and the phenol, and then the Nachtblau are added. (2) Decolorizing solution: 25% HCl, 3 ml.; 70% alcohol, 100 ml. (3) Counterstains: neutral red, pyronin, carbol fuchsin, or Bismarck brown.

Method for films.—Heat Nachtblau stain on the

slide until it just boils and allow to stand for 5 min. Pour off stain and decolorize with acid alcohol until no more blue stain washes out. Wash well in water. Counterstain for a few seconds, wash in water, and dry.

Method for sections.—Heat Nachtblau stain on the slide until it steams and repeat the heating twice more; allow to stand for 5 min. Decolorize and counterstain with pyronin (pyronin 0·25 g., solid phenol 0·5 g., distilled water 100 ml.; dissolve pyronin in water, add phenol). The procedure for staining sections is still in the experimental stage.

Tubercle bacilli stain dark blue and appear larger and more distinct than when stained by the Ziehl-Neelsen method. The only other organism met with in such preparations, and which retains the Nachtblau, is a "fungus of the *Oidium* type" which R. has described in tuberculous material and which he considers may have some connexion with the tubercle bacillus.

A number of colour photographs show the staining features of this new method, which might be useful for other acid-fast bacilli, *e.g. Mycobacterium johnei.*

—E. G. WHITE.

MORTON, H. E. (1943). **An Improved Technic for Growing Microorganisms under Anaerobic Conditions.** *J. Bact.* **46.** 373–376. **2794**

M. considers that in the routine use of anaerobe jars, explosions are sufficiently frequent to merit the modified method which is described. An air-tight jar with stopcock is necessary but the lid need not have the electrically heated catalyst. Palladiumized asbestos (0·3–0·5 g.) is placed in a small dish in the jar, along with the cultures. The jar is evacuated four times to a pressure of 152 mm. mercury and each time is refilled from a cylinder of an inert gas mixture (90% nitrogen and 10% carbon dioxide). After the fifth evacuation, sufficient hydrogen is introduced to increase the pressure in the jar by 50 mm. and the inert gas mixture is finally introduced until the pressure is 20 mm. below that of the atmosphere. Growth of cultures is satisfactory and the method requires only 3–4 min.—J. K.

LOBASHOV, F. S. (1935). Opyt primeneniya formalinovoĭ reaktsii pri sluchnoĭ bolezni, piroplazmoze i meningitopodobnykh zabolevaniyakh u loshadeĭ. **[Formol-Gel Test in Dourine, Piroplasmosis, and Equine Encephalomyelitis].**—*Trud. Ural'sk. vet.-zootech. Inst.* No. 1. pp. 53–61. **2795**

The test may be of some diagnostic value especially in the preliminary examination of herds suspected to be infected. In horses with pronounced symptoms of dourine and giving a positive complement-fixation reaction, complete gelation took place within 24 hours; in horses with doubtful symptoms and a doubtful c.-f. reaction, gelation occurred within 48 hours. Dourine horses, previously treated with naganol, did not give a pronounced reaction.

In horses with E.E., in those affected with, or recovered from, piroplasmosis, and in one positive mallein reactor, gelation also occurred within 48 hours. In normal horses the formol-gel test was negative.

—A. MOLDAWSKY.

CARES, R. (1943). **Rapid Diagnosis of Malaria by the Use of a Wratten Light Filter.**—*J. Lab. clin. Med.* **28.** 1750–1751. **2796**

Contrast filters can be used in clinical microscopy just as they can in the photography of stained objects. Malaria cannot be readily diagnosed from a short search for the parasite especially when the young "signet-ring" stages are present. A suitable light filter will produce the maximum contrast between the parasite and the red cells without affecting the stain for routine purposes. Blood stains are essentially a combination of methylene blue and eosin and it was found that a Wratten E light red filter (series 23A) has a spectral transmission range parallel to that of eosin. A higher percentage of incident light in the red part of the spectrum is transmitted by the filter so that the red cells appear lighter. The blue-stained elements appear darker, as blue and green light are absorbed by the E filter. Three to four times as many parasites can be located in a given time as with normal lighting.—C. HORTON SMITH.

JOHNSON, E., ANDREWS, F. N., & SHREWSBURY, C. L. (1943). **The Preparation of Muscular Tissues for Histological Study.**—*J. Anim. Sci.* **2.** 244–250. **2797**

This is a description of the methods which the authors have found most suitable for histological examination of muscle tissue in the course of work on the histology of beef in relation to such factors as age, plane of nutrition, sex, effect of freezing, etc. The best fixatives were alcohol-acetic acid, Carnoy's chloroform-alcohol-acetic acid, and formalin-alcohol-acetic acid. For special work, 10% formalin is unsatisfactory since it causes shrinkage and separation of the muscle fibres. It can be employed as a supplementary fixative and it is recommended that triplicate samples of muscle should be fixed, one in each of two special fixatives and the third in formalin. Butyl alcohol is recommended as a dehydrating and clearing agent. Direct transference of muscle tissue from fixatives to dioxan and then into paraffin was unsatisfactory.—E. G. WHITE.

MICHELSEN, E. (1943). Om Vaevsdyrkning. Historie, Teknik og Betydning. **[Tissue Culture].**—*Maanedsskr. Dyrlaeger.* **55.** 441–450. **2798**

This is a short account of the principles of tissue culture and of examples of uses to which it is put, *e.g.* in the study of virus diseases and neoplasms. No new facts are reported.—J. E.

STOWELL, R. E., & ALBERS, V. M. (1943). **A Spectrophotometric Analysis of Tissue Staining.**—*Stain Tech.* **18.** 57–71. **2799**

The absorption spectra of certain commonly used staining solutions were compared with those of stained gelatin, tendon, blood plasma, thymus, and fat to obtain evidence regarding the chemical changes associated with the process of staining. The stains used were acid fuchsin, anilin blue, azocarmine G, basic fuchsin, eosin Y, orange G, picric acid, and Sudan IV. The results indicated that as the spectral absorption curves for the staining solutions and the substances stained with the solutions were similar, a chemical alteration in the chromophore group of the stain is not involved in the process of staining. It is also shown that aqueous basic fuchsin represents a different dye from the fuchsin-sulphurous reagent to which formaldehyde has been added to give the Schiff colour reaction.—R. ALLCROFT.

EPSTEIN, R. D., & TOMKINS, E. H. (1943). **A Comparison of Techniques for the Differential Counting of Bone Marrow Cells (Guinea Pig).**—*Amer. J. med. Sci.* **206.** 249–260. **2800**

The three methods which have been used for obtaining differential counts of bone-marrow cells—fixed smears, sections, and supravital staining—were compared, the femoral marrow of normal g. pigs being used. Fixed smears were found unsuitable owing to inadequate distribution of the cells and trauma. The other methods were suitable for obtaining comparative figures but yielded different absolute values in the same animal:—in sections there was a higher polymorphonuclear count and a shift towards younger cells and it was difficult to differentiate monocytes from clasmatocytes.

The methods used are described in detail, including

a modification of the supravital method using neutral red in which marrow fragments are employed, and the cells at the periphery of the fragments are examined and classified.—E. G. WHITE.

BAILEY, H. (1944). **Bone Marrow as a Site for the Reception of Infusions, Transfusion, and Anaesthetic Agents. A Review of the Present Position.**—*Brit. med. J.* Feb. 5th. 181–182. **2801**

There may be considerable difficulty in entering a vein, especially in badly shocked patients. As a result of considerable experience, B. considers that the medullary cavity of the manubrium sterni is as good a receptor as a vein for infusions of all kinds and for pentothal anaesthesia. The technique for carrying out the injection under local anaesthesia is described and illustrated. Even in old age the sternum is full of red fluid marrow macroscopically indistinguishable from blood.—J. F.

DE NOSAQUO, N., KERLAN, I., KNUDSEN, L. F., & KLUMPP, T. G. (1944). **Clinical Use of Oral Thermometers. Report to Study to Determine Time Required for Reliable Registration.**—*J. Lab. clin. Med.* **29.** 179–184. **2802**

The oral thermometers used in this test conformed with the Commercial Standard requirements of the United States Bureau of Standards. The character of the rise of mercury under clinical conditions was found to be different from that registered in the waterbath or hot-air bath. Clinical tests indicated that 3 min. should be the minimum period allowed for taking the temperature orally, even if thermometers are marked with specific time designations such as 1 min. or 30 sec.

—I. W. BROCKLEHURST.

MAIZELS, M. (1944). **Processing of Plasma with Kaolin.**—*Lancet.* **247.** 205–208. [Author's conclusions copied *verbatim*]. **2803**

Fibrinogen in citrated plasma may be removed by adsorption on kaolin. The product obtained may be filtered and dried.

Transfusion with this material has been particularly free from reactions, which suggests that kaolin may remove toxic substances sometimes present in plasma.

MACFARLANE, R. G., O'BRIEN, J. R. P., DOUGLAS, C. G., MOLE, R. H., JOPE, E. M., AMOS, B., JOPE, H. M., & QUELCH, P. (1944). **The Haldane Haemoglobinometer. I. Iron, Oxygen, and the British Standards Institution Colour Standard.**—*Brit. med. J.* Feb. 19th. 248–250. **2804**

Considerable variability was revealed in haemoglobin estimations by the Haldane-Gowers haemoglobinometer when compared with estimations based upon spectrophotometry, oxygen capacity, or iron determinations. The variation was believed to be due in part to technical errors and in part to a sex difference in the ratio of colour to iron content and oxygen capacity of haemoglobins.—RACHEL MARSHALL.

See also absts. **2602** (diagnosis of mastitis), **2616** (of pullorum disease) **2787** (of brucellosis).

MISCELLANEOUS

—. (1943). **Council of Agriculture for England. Report on the Principles and Objectives of Long-Term Agricultural Policy.** pp. 16. London: H.M. Stat. Off. [8vo] [3d.] **2805**

A long-term agricultural policy is considered on the basis that livestock and livestock products represent 70% of the total value of the agricultural output of England and Wales and about 80% of the value in Scotland. Future development of agriculture is considered to depend very largely upon a prosperous and efficient livestock industry. Considerable expansion of the livestock industry is envisaged. Special importance is attached to problems associated with livestock breeding and animal disease. Full development of veterinary services both for research and treatment is advocated, together with extended provision for veterinary education.

Special emphasis is laid on the necessity of veterinary and agricultural colleges possessing ample facilities and finances to undertake research work. The results of such work should be rapidly applied to agriculture possibly through direct contact between practical agriculturists and research workers.—D. D. OGILVIE.

—. (1944). **Great Britain. Scientific Research and Development.** Cmd. 6514. pp. 12. London: H.M. Stat. Off. [8vo] [2d.] **2806**

This White Paper describes the Government machinery for the promotion of scientific research and development, but for security reasons omits all reference to research directed to the needs of war production and the fighting services.

Part II of the report deals with the activities of the Development Commission and the Privy Council Committees. The Development Commission are empowered to recommend to the Treasury advances from the Development Fund by way of grant or loan to Government departments, universities etc., for the advancement of approved schemes. The Privy Council Committees may frame schemes for adoption by a Government department or other authorized body.

The Committee of the Privy Council for Scientific and Industrial Research was appointed in 1915 to direct the application of money granted by Parliament for the organization and development of scientific and industrial research. In 1916, the Department of Scientific and Industrial Research was set up and it is responsible for maintaining a number of national research institutes and also gives grants in aid to other bodies and individuals. The Department's work embraces all branches of natural science and industry except medicine, agriculture, fisheries, and forestry.

The Medical Research Council and the Committee of the Privy Council for Medical Research to which it is responsible were set up in 1920. The Medical Research Council maintains research institutions of its own and also arranges for its workers to be accommodated in other institutes and may also make grants to independent workers for particular investigations.

The Committee of the Privy Council for Agricultural Research to which the Agricultural Research Council is responsible was established in 1930 and the Council itself in 1931. The Agricultural Research Council has two functions. Firstly, the Council are responsible for the general scientific supervision of all agricultural research in Great Britain, and secondly, they are free to spend their grant at their own discretion and to undertake research themselves. In 1937, a field station was established at Compton, Berkshire, to provide facilities, including isolation units, on a scale not available at the research institutes. There are, in addition, a number of research officers accommodated in universities or other institutes where facilities best exist for their particular work under the Agricultural Research Council. The Council has since 1940 established three research units concerned with animal physiology, soil enzyme chemistry, and insect physiology.

Part III of the report deals with the departmental organization of research. The services of the Department for Scientific and Industrial Research, the Medical Research Council, and the Agricultural Research Council are at the disposal of all Government departments, but in addition a number of departments, including the Ministry of Agriculture and Fisheries, the Forestry Commission, and the Ministry of Health, maintain their own laboratories. The Ministry of Agriculture and Fisheries maintain their own veterinary and plant pathological laboratories. Foot and mouth disease research is carried on under a committee appointed by the Minister of Agriculture and Fisheries. The Minister of Agriculture and Fisheries and the Secretary of State for Scotland have recently set up the Agricultural Improvement Councils for England and Wales and for Scotland respectively, and the function of these bodies is to expedite the incorporation of new knowledge into ordinary farming practice.

Part IV deals with the activities of the University Grants Committee in encouraging fundamental research in the universities.

Part V describes the organization for the co-ordination of research through the Scientific Advisory Committee of the War Cabinet. The Lord President of the Council as the Minister responsible for the Department of Scientific and Industrial Research, the Medical Research Council, and the Agricultural Research Council has become regarded as the member of the War Cabinet responsible for the general supervision of the Government scientific organization.

—T. E. GIBSON.

—. (1942). **Report on a Conference of Veterinarians [Nominated by the State Ministers and the Commonwealth Departments, held in Canberra on May 12-16, 1941].**—*Aust. vet. J.* **18.** 136–137. **2807**

At the request of the Australian Agricultural Council, the Commonwealth Minister for Health called a conference of veterinarians, nominated by state and Federal departments, in Canberra in May 1941. Its purpose was to review :– (a) present measures designed to prevent the introduction of exotic animal diseases, and (b) the means of control available in Australia to combat exotic diseases which might gain entrance and epidemic diseases already present. In regard to (b), special consideration was given to the adequacy of the veterinary services and disease control legislation and to means of ensuring fullest co-operation between state and Commonwealth services. No major changes in the existing quarantine measures were recommended. In connexion with the possible introduction of exotic diseases three committees were set up, *viz*, (a) a Consultative Committee to be called together at the request of the principal veterinary officer of any state or territory to devise appropriate measures for combating introduced disease or serious epizootic disease of Australian origin ; (b) an Information Committee to plan the dissemination among all veterinarians of information on epizootic diseases not present in Australia, and (c) a Diagnosis Committee to prepare plans to facilitate the recognition by diagnostic laboratories of exotic diseases which might gain entrance to the Commonwealth. Because of the value of meat inspection services in the recognition of disease, the conference recommended that the State Departments of Agriculture and Stock should control meat inspection wherever the inspectors of the Commonwealth Department of Commerce were not operating. Veterinary services throughout Australia are numerically inadequate and it was recommended that they be increased. The conference considered that eventually a Commonwealth Bureau of Animal Industry should be established, but that as disease control is at present a state function a central body should now be set up, representing Commonwealth and states, to act in a consultative and advisory capacity.—D. A. GILL.

WILSON, W., & KING. (1941). **Modern Rabbit Keeping.**—*Bull. Min. Agric. Fish., Lond.* No. 50. pp. 40. [1s.] **2808**

This is a concise and well illustrated summary of practical facts relating to feeding, breeding, general management, housing, and also the marketing of carcasses and pelts. The section on health and hygiene is meagre, the reader being referred to " Some Diseases of Rabbits " [*Bull. Min. Agric. Fish., Lond.* No. 14. (1939)]. Useful diagrams include those illustrating the way to tell the sex at birth. A selected bibliography is appended, and the work should prove extremely useful to all who require information of a practical nature on this subject.—ALASTAIR N. WORDEN.

REPORTS

GREAT BRITAIN. (1943). **Royal Veterinary College and Hospital. Annual Report for the Academic Year ended the 30th September 1943.** pp. 4. [4to] [Typescript]. **2809**

The report gives details of the number of students admitted to the college in September 1942, the total number of students, and the percentages of passes in the professional examinations during the session 1942–43. Details are given of the number of cases treated at the Beaumont Animals' Hospital, and staff changes during the year are recorded. A list is given of the research work which has been carried out in the various departments, the main items being :– the operation for the relief of TRAUMATIC RETICULITIS in cattle, the analeptic properties of picrotoxin, artificial insemination, certain aspects of bovine INFERTILITY, an alleged toxicity of cod liver oil, " GRASS SICKNESS " in horses, the closure of the foramen ovale in the foetal heart, *Corynebacterium pyogenes* INFECTION in cattle, studies on JOHNE'S DISEASE, observations on the distribution of a particular type of *Clostridium welchii*, the life-cycle of *Babesia bovis* in the tick, COCCIDIOSIS in war dogs, REDWORMS [strongyles] and ANEURYSMS in horses, LEAD POISONING in calves, LATHYRISM in horses, and observations on the value of sweet lupins for the feeding of animals.—T. E. GIBSON.

GREAT BRITAIN. (1942). **Royal College of Surgeons of England. Scientific Report for the year 1941-1942.** pp. 24. London : The College. [8vo] **2810**

The first part of this report deals with Museum activities and details the steps which have been taken to disperse, repair and restore the valuable museum specimens surviving the bombing of May 1941 and also the action which has been taken towards the re-establishment of the Museum collection.

The second part of the report summarizes the research work which was carried out during the year 1941–42. Investigations were made on the effects of plasma transfusions in animals. It was found that of the plasma transfused, a large quantity was used in forming a surface film on the expanded vascular bed, leaving only a variable quantity for dilution of the circulating blood. It was also shown that movement of fluid out of the bloodstream took place rapidly, irrespective of the concentration of plasma proteins in the plasma trans-

fused and that the outward movement of fluids was accompanied by a movement of plasma proteins. Observations were made on the changes in haemoglobin and plasma protein concentrations in animals subjected to controlled haemorrhages before plasma transfusions. It was demonstrated that plasma proteins enter the bloodstream in appreciable quantities shortly after haemorrhage, concurrently with a movement of plasma-free fluid. When blood or plasma transfusions are given after haemorrhage there is evidence of a movement of fluid out of the circulation within an hour or two after transfusion. It was suggested that movement of plasma protein into the circulation was more dependent on the state of the plasma protein stores of the body than upon anything else. Movement of plasma protein out of the circulation after transfusion was continuous until the plasma protein stores were saturated; further addition of plasma then caused a rise in plasma protein concentration indicating that further transfusions were not beneficial and would result in "protein intoxication". A study of the blood volume changes after plasma transfusion in normal animals and in those previously bled showed control of the blood volume to be independent of plasma concentration. Investigations on the control of blood volume are continuing; it is considered that the use of radio-active isotopes of iron may enable accurate measurements to be made. Investigations were made on the skin temperature changes after haemorrhage and transfusion, but are incomplete. A technique has been devised for the observation of the capillary field and it is being used for the study of changes in the vascular bed after transfusion. Work during the year has suggested that protein storage is one of the most important factors in the response of animals to haemorrhage, transfusion, trauma, and infection, and investigation is proceeding on the problem of building up plasma protein reserves of the body without the use of plasma transfusions.

An investigation was carried out at the request of the Ministry of Health of a new suture material and it proved to be satisfactory. At the Buckston Browne research farm investigations on food poisoning continued and the effects of *Salmonella typhi-murium* on kittens and human beings were investigated.—T. E. G.

GREAT BRITAIN. (1943). **London School of Hygiene and Tropical Medicine (University of London) Incorporating the Ross Institute. Report on the Work of the School for the Year 1942–43.** pp. 41. London: The School. [8vo] **2811**

Department of Entomology.—A study was made of contact insecticides, especially pyrethrum, and the effect of alterations in the solvent employed. The efficiency of newer synthetic insecticides against head and body lice was explored. Attention was also directed to materials toxic to the sheep tick, *Ixodes ricinus*.

Department of Biochemistry.—The major activities of the department were concerned with patulin (anhydro-3-hydroxymethylene-tetrahydro-γ-pyrone-2-carboxylic acid) which was shown to be a powerful antibacterial agent inhibiting the growth of both Gram-positive and Gram-negative bacteria in concentrations of 1 : 33,000–1 : 100,000. Patulin is also an excellent anti-fungal agent. Notatin, the second antibacterial substance produced by *Penicillium notatum* was also studied, but so far it has been found effective only *in vitro*.

Institute of Agricultural Parasitology.—An investigation was made into the incidence of liver fluke in cattle. Its occurrence in 73,000 carcasses slaughtered in Great Britain was analysed statistically. A report of a trial of phenothiazine against nematode parasites in sheep was prepared.—D. D. OGILVIE.

INDIA. (1939). **Pasteur Institute of India, Kasauli. The Thirty-Eighth Annual Report of the Central Committee of the [Pasteur Institute] Association and the Audited Accounts up to September 30th, 1939. Also the Report of the Director of the Institute. Part I for the period 1st April 1938 to 30th September 1939. Part II for the year 1938.** [WEBSTER, W. J.] pp. 31 + 44. Simla & New Delhi: Liddell's Printing Works. [4to]. **2812**

30,474 patients were given antirabic treatment at the Institute and at its various centres. The vaccine employed is a sheep-brain vaccine in 5% suspension made from the "Paris virus" and inactivated with phenol. Details of preparation are given. Four definite cases and one doubtful case of post-treatment paralysis are reported.

Research was undertaken on :– the value of immune serum in antirabic treatment; the antigenic value of monkey-brain antirabic vaccine; the duration of immunity in vaccinated animals, and the therapeutic value and the improvement of animal vaccines.

In a graph there are details of the number of persons vaccinated each year since 1900 (showing the several types of vaccine used over a period). The tables include details of :– the type of infection from the suspected rabid dogs (licks and bites); the classification of the cases according to the part of the body so affected (including the number, depth, and situation of wounds and the effects of clothing covering the sites of bites); an analysis of the deaths of infected persons; an analysis of deaths according to the nature of the bite and lateness of arrival for vaccination; deaths in 1938 analysed according to the type and position of the bite and the species of animal concerned (of 68 cases 47 were from dog bites, 14 from jackals, and 7 from wolves); an analysis of cases showing the number treated (21,253), the death rate, and the animals by which they were bitten (dog, jackal, wolf, tiger, panther, hyaena, badger, cat, fox, mongoose, pig, horse, mule, donkey, cattle, buffalo, goat, camel, rat, and human being); details of the number of brains sent for diagnosis; and finally a classification according to the animal which bit, scratched, or licked the patient for the period 1908–1938 (this list shows a different range of animals from that referred to above).

The manufacture and issue of antirabic vaccine was transferred from the Pasteur Institute of India, Kasauli, to the Central Research Institute, Kasauli, on October 1st, 1939.

A short note on the history of the Institute is included in the report. From 1900–1938, 276,935 persons were treated at the Institute.—D. B. MUKHERJI.

INDIA. (1941). **Annual Report of the Central Research Institute, Kasauli, for the Year 1939.** [TAYLOR, J.] pp. 76. Delhi: Manager of Publications. [8vo] [Re. 1 or 1s. 6d.] **2813**

The main activities consisted of the manufacture of sera and vaccines, including antirabies vaccine, and of research. In addition, the Institute gives technical advice on medical and public health problems, and acts as the control centre for serum standardization and distribution of standard sera.

Among the products manufactured were influenza vaccines; bivalent antivenom serum for the venoms of Indian cobra and Russell's viper, and high-titre sera for diagnostic purposes. The Institute maintains for supply a type collection of standard strains of bacteria, as well as strains isolated in India.

From October 1st, 1939, the production of antirabic vaccine was taken over from the Pasteur Institute, Kasauli, and the latter establishment was closed down.

The vaccine used is a phenolized, 5% sheep-brain vaccine. Numerous tables are given, showing various data concerning the cases treated. One definite case of paralytic effects following treatment was reported. Appendices II and III show respectively old and new systems of classification of dog-bite cases and courses of treatment advocated.

Studies were made on the morphology, growth, and dissociation of *Pasteurella pestis*; and on the serological relationship of *Past. pestis* and *Past. pseudotuberculosis*.

101 strains of staphylococci isolated in India from pathological sources and healthy skin were studied and coagulase activity was found to be reliable for distinguishing pathogenic from non-pathogenic strains. COWAN's method of serological classification appeared to be less reliable.

The formula suggested by IPSEN for calculating the potency of antivenins for European vipers has been found to be applicable to cobra antivenin.—D. B. M.

BRITISH GUIANA. (1942). **Report of the Livestock-Veterinary Division for 1942.** [FRASER, H. A.] pp. 14. [fcp] [Typescript]. **2814**

The veterinary division controls (1) the Government stock farm and breeding station; (2) intermediate savannah investigations including Ebini Downs livestock experiment station and Rupununi cattle trail; (3) hinterland savannahs, Rupununi district; (4) animal husbandry, and (5) animal health. The work under each of these sections is reviewed.

A few cases of MASTITIS occurred and one case of MILK FEVER. Four cases of ANAPLASMOSIS which were treated with acaprin recovered. FOOT AND MOUTH DISEASE broke out in December 1941 along the Takutu River and rapidly spread to other areas. Stock remained in quarantine until October 1942. The disease occurred in a mild form and the death rate was low. There was, however, reduction in the birth rate, especially on the Jacare and San Jose ranches where the infection was at its worst. HELMINTH INFESTATIONS in all animals account for much unthriftiness. Horses are given routine treatment with carbon tetrachloride. Calves and sheep are infested with tapeworms and stomach worms. Treatment is carried out with copper sulphate solution and phenothiazine. Screwworm infestation of the navel is common. Further investigation of the diseases prevalent is necessary.

Malnutrition appears to account for some of the mortality in the cattle breeding herd. Local cattle are being graded up by the use of Holstein bulls. Hatchery records show that 60·38% of all eggs set hatched; 25·77% were unfertile and chick-embryo mortality was 13·85%. The increase in the local demand for livestock products has strained the resources of the Colony.

—J. A. GRIFFITHS.

COLONY OF MAURITIUS. (1943). **[Annual Report of the] Veterinary Division [1942].** [LIONNET, F. E.] —*Rep. Dep. Agric. Mauritius, 1942.* pp. 3 & 24–25. **2815**

4,797 cattle were tested for TUBERCULOSIS and 0·6% reacted. Three bulls of the Charolais and one bull of the Africander breed reacted to the tuberculin test and were slaughtered; breeding was consequently hampered, due to shortage of imported bulls. ABORTION was recorded in four cows; an anti-streptococcal vaccine is said to have given satisfactory results as a prophylactic. Only 15 of 9,024 blood smears examined were positive for TRYPANOSOMIASIS; one equine and ten bovine animals had *Trypanosoma evansi* infection and four bovine animals *T. vivax* infection.

1,173 bullocks were imported from Madagascar and Rodrigues and 1,157 pigs, 627 sheep, and 2,499 goats from Rodrigues. 1,512 animals of the local milch breed were slaughtered as part of the scheme for the improvement of livestock.

Lectures were given to veterinary students of the first, second, and third years; no details of the course are given.—J. A. GRIFFITHS.

CANADA. (1943). **Report on the Fur Farms of Canada 1941.** pp. 33. Items of veterinary interest p. 11. Ottawa: Department of Trade and Commerce, Dominion Bureau of Statistics, Fisheries and Animal Products Branch. [4to] [25 cents] [In English and French]. **2816**

This is a statistical report on the fur farms of Canada and contains a great deal of information on the number and value of fur animals bred in Canada in 1941 and on their products. Comparative tables covering the years 1936–41 are also included. The table of greatest veterinary interest is that giving the number of deaths of animals on fur farms in 1941. The table does not include information on the causes of death, but this information can be obtained on application to the Dominion Bureau of Statistics.—T. E. GIBSON.

U.S.A. (1944). **Report of the Chief of the Bureau of Animal Industry, Agricultural Research Administration, 1943.** [MILLER, A. W.] pp. 48. Washington, D.C.: Govt. Printing Off. [8vo]. **2817**

GENERAL.—The year's activities were carried out under the direction of JOHN R. MOHLER, Chief of the Bureau, who retired on July 31st, 1943.

Research work was directed mainly to problems connected with the national war effort, *viz*, nutritional problems, substitute feeds, dehydration of meats, and animal fibre investigation.

In the production of food animals, special emphasis was given to the application of known disease control methods.

The Bureau had 1,675 full-time employees at the end of the year; 90% of the 859 professional and scientific employees were veterinarians. In addition, 380 of the permanent employees were on furlough for military service.

RESEARCH IN ANIMAL HUSBANDRY [MCPHEE, H. C.] —The vitamin content of hundreds of animal foodstuffs has been compiled and published. Investigations on the characteristics of dehydrated meat and its nutritional value show its great value as a food. Details are given of meat studies carried out in relation to production and storage.

Breeding and fattening cattle were found to need vitamin A. Deficiency of the vitamin was found to cause IMPOTENCE in bulls and incoordination and generalized oedema or swelling of the legs, brisket, shoulders and other parts of the body of all animals. Cattle obtain vitamin A from carotene found most abundantly in fresh green grass, and also in hay, especially legume hay less than one year old; 5–10 lb. of good hay is required daily to make up a deficiency of vitamin A in the diet of breeding cattle, and 3–5 lb. of hay for fattening animals. The availability of carotene is affected by its source. Dehydrated alfalfa leaf meal was the most effective source, 1,937 μg. of carotene from this being equivalent to 2,591 μg. from hegari [a variety of sorghum] silage and 2,194 μg. from sumac [*Rhus* spp.] silage.

Details are given of various cross-breeding and nutritional experiments.

URAEMIA caused heavy losses in young pigs in the first two weeks of life in one herd. Blood sugar content was found to be normal. The cause of the condition was not found.

Investigations are being made on the possibility of

reducing the bulk of the rations of horses and mules in order to save transport. Work done shows that the rations hitherto fed to horses, pigs, and other animals can be reduced appreciably without loss of efficiency.

RESEARCH IN ANIMAL DISEASES [EICHHORN, A.]—One horse reacted to the complement-fixation test for GLANDERS.

Investigations on the control of BOVINE MASTITIS (*Streptococcus agalactiae* infection) showed that colloidal silver oxide, tyrothricin, acriflavine, or entozon in mineral oil were 80% effective in eliminating infection. Sulphanilamide so used was apparently not as effective. This treatment, combined with the elimination of cows remaining infected and with reasonable precautions to avoid reintroduction of the infection, "seemed to offer encouraging prospects for control of this form of mastitis". *Staphylococcus aureus* infection was readily transmitted by inoculation through the teat canal.

The use of strain 19 vaccine has been found to be quite safe for controlling BOVINE BRUCELLOSIS. Extensive tests have shown that there is no variation in virulence of the strain as grown and checked in the laboratories of the Department. Seven heifers receiving large doses of the vaccine during their first pregnancies calved normally and were free from *Brucella abortus* infection. None of nine unvaccinated controls closely confined with these seven exposed heifers during two gestation periods showed any evidence of infection. In adult animals, no infection was demonstrated as a result of vaccination and although there was a higher percentage of persistence of blood agglutination titres than in unvaccinated animals, *Br. abortus* was not recovered. Vaccinated calves from infected and healthy dams were equally resistant to infection. Antigen for the tests is prepared under Federal Government control and all vaccine prepared by commercial laboratories is tested at the Animal Disease Station; 8% of the vaccines so tested were condemned.

Brucella suis has been found to be most commonly transmitted by boars infected in the genital tract. At the Animal Disease Station, 70% of gilts bred to known infected boars contracted the disease. Abortions in the first six weeks of pregnancy may pass unobserved. Infection in sows is less persistent than in boars and in young pigs from infected sows. Infection is particularly persistent in boars infected in the genital tract, while in young pigs infection may persist for as long as four months after transfer to clean premises. Vaccination of pigs against SWINE BRUCELLOSIS shows that an active resistance can be established. The vaccine used was prepared from *Br. abortus* and *Br. suis* cultures of low virulence.

The vaccine used against SWINE ERYSIPELAS is giving satisfactory results; 1,500,000 pigs were treated during the year.

Work was carried out on pig PARATYPHOID, and it was found that *Salmonella cholerae-suis* was capable of causing illness and death in pigs independently of infection with the SWINE FEVER virus.

An improved medium has been evolved for preparing stained antigens (sodium thiosulphate glycerol medium) for use in PULLORUM DISEASE control.

Pre-seasonal vaccination against EQUINE ENCEPHALOMYELITIS is considered to be the most important factor in the control of the disease. A bivalent vaccine (prepared from both Eastern and Western strains) or simultaneous vaccination with Eastern and Western types of vaccine is recommended. Under experimental conditions, pigeons and ring-necked pheasants can act as carriers without their showing symptoms of infection.

VESICULAR STOMATITIS can be differentiated from FOOT AND MOUTH DISEASE by its milder course and less severe type of lesion. There are two types of vesicular stomatitis virus, the Indiana and the New Jersey. These can be differentiated by injection into the brains of healthy horses, cattle, or sheep; with the Indiana type symptoms are slight and the animals recover. With the New Jersey type symptoms are severe and results are fatal. Animals inoculated on the tongue with either type of virus did not always develop infection, but if infection did develop the animals soon recovered and were immune to re-inoculation with the type of virus first used but were susceptible to the second type.

It has been found that by the addition of ethylene glycol instead of disodium phosphate or glycerol to crystal-violet SWINE FEVER vaccine, a product can be obtained in which there is better control of contaminating micro-organisms. Incubation of the vaccine for three days decreases its virulence and five days' incubation destroys the ability of the virus to produce disease.

Details are given of studies in progress on the AVIAN LEUCOSIS complex. These consist of finding means of early diagnosis, immunization experiments and collecting information on the various types of the disease.

Semen stored more than 24 hours was of no use, for ARTIFICIAL INSEMINATION of sheep.

LIVESTOCK AND POULTRY PARASITE INVESTIGATIONS [SCHWARTZ, B.]—Emphasis was placed on practical, labour-saving means of controlling parasitic infestations of economic importance. The great advantage of early diagnosis of SHEEP COCCIDIOSIS is emphasized; in the absence of organisms in the faeces, this can be achieved by P.M. examination of the first animals that die in an outbreak, and detection of the parasite in the lower part of the small intestine.

Observations made on CATTLE COCCIDIOSIS by the Research Laboratory, Auburn, Alabama, show that calves less than three weeks old seldom void oocysts. Calves 3–12 weeks old harboured *Eimeria ellipsoidalis*, a cause of non-bloody scours; cattle 4½ months to two years old harboured *E. bovis*, a cause of bloody scours. *E. zürnii* was found in 50% of animals between six weeks and one year of age. Carrier animals were found in every herd. Crowding of animals and general insanitary conditions were favourable to the spread of the disease. A system of pen rotation is considered the only reliable means of control in calves while they are at the most susceptible age.

Sulphaguanidine is tentatively recommended as being useful in the treatment of intestinal as well as caecal COCCIDIOSIS in poultry.

In 20 experimentally produced cases of ANAPLASMOSIS, the peak of parasite abundance was reached 8–13 days after parasites were first observed in the blood.

It is stated that:—"A preliminary analysis of 9 cases of experimental anaplasmosis in cattle showed that when the animals were treated with an arsenic compound, namely, Fowler's solution, multiplication of the organisms was suppressed, and this, in turn, prevented massive destruction of the red blood cells of the cattle so treated, thereby making the disease less severe. Other promising drugs tested were neoarsphenamine, tryparsamide, sodium iodide, and quinine sulfate". Tabanids appear to transmit the disease. No connexion was found between the prevalence of ticks and mosquitoes—already incriminated as vectors—and outbreaks of the disease in the U.S.A.

Trichomonas foetus was found in the greatest numbers on the glans penis in four infected bulls. Treatment of TRICHOMONIASIS of turkeys with a variety of drugs was ineffective.

Transmission of SARCOCYSTIS was found to be due to the ingestion by susceptible pigs of feed or water contaminated with infected faeces.

In studies on HELMINTHIASES, phenothiazine shaken up in milk or in a 4% suspension of flour and water was found to be effective against NODULAR WORMS in sheep [*Oesophagostomum columbianum*]; these parasites are most commonly seen in the Middle West. 10% phenothiazine in salt was found effective in use as a salt lick. Sheep consumed on an average about ¾ lb. phenothiazine and 6 lb. salt annually. In ponies, 2 g. of phenothiazine in the feed daily was reasonably effective in eliminating "bloodworms" [? strongyles] and related parasites, and in preventing reinfestation, but more was necessary for horses. Mixtures of salt and phenothiazine in the proportions of 29 : 1 and 39 : 1 were readily consumed by horses, and gave promising results in a few cases in the control of STRONGYLOSIS. Tests to determine the frequency of dosing necessary to keep horses reasonably free from worm infestation showed that in three horses there was some reinfestation within 11 days of treatment, but in four other horses reinfestation was not evident for four months.

The following treatment was used for LIVER FLUKE INFESTATION in cattle :– 500 g. brown powdered bentonite were added slowly to 750 ml. water, with constant stirring. The dose used was 20 ml. of the mixture per 100 lb. body weight. 92% of the flukes harboured were evacuated, as determined by the absence of fluke eggs in the faeces. Only 2·5% of the animals failed to respond satisfactorily to the treatment.

INTESTINAL THREADWORM [*Strongyloides ransomi*] INFESTATION of pigs occurred readily when pigs were exposed to infestation from litter, food, or drinking water containing infective larvae. Symptoms were loss of appetite, falling hair, soreness of muscles, diarrhoea, intestinal haemorrhage, and extreme emaciation. Larval stages of the parasite were found in the skeletal and heart muscles, body cavity, lungs, testicles, brain, and spinal cord. Development of the free-living stages of the worm is retarded in cold weather.

Cubé powder (containing 5% rotenone) dips appear to be of value in controlling OX WARBLES. There are difficulties, however, in applying the treatment effectively as the solution needs to be in contact with the parasite for at least 2 min. Sheep ticks can be effectively destroyed by a dip consisting of 4–6 oz. of cubé powder per 100 gal. water. The effect of the dip appears to last for some months.

ACTIVITIES OF THE FIELD INSPECTION DIVISION [FLADNESS, S. O.]—This Division was chiefly concerned with the eradication of SCABIES and the control of DOURINE and ANTHRAX, and with the inspection of animals imported and exported. 11,679,895 sheep and 1,772,288 cattle were inspected; 677,253 sheep and 11,655 cattle dippings were supervised. Of over 20,000 horses tested for DOURINE in Arizona, less than 1% were infected. There were no serious outbreaks of ANTHRAX.

MEAT INSPECTION [JOSS, E. C.]—The Meat Inspection Division was transferred in January 1943 to the Food Distribution Administration.

TUBERCULOSIS ERADICATION [WIGHT, A. E.]—9,308,936 cattle in 563,413 herds were tuberculin tested; 0·18% reacted, this being the lowest figure since 1917. At the end of the year, 63,846,496 cattle were under supervision for TB. eradication. The total Federal expenditure, including both operating expenses and compensation for cattle slaughtered, was $1,230,000. The combined state, territorial and county expenditure was about $2,330,000 for operating expenses. 12,689 approved veterinary practitioners in the 48 states continued to test cattle for the purpose of inter-state movements. 183,378 cattle were tested and 16 reacted.

A poultry survey of 7,558,656 birds was made of flocks at farms where cattle were being tested; 1,552 of the 52,044 flocks were infected. B.A.I. veterinarians on avian TB. eradication work visited 7,536 farms and inspected 1,312,092 birds; 1,248 farms were infected. Of 323,847 birds tested, 3·5% reacted.

In JOHNE'S DISEASE eradication, 4,877 cattle were tested with johnin or avian tuberculin and 5% reacted and were slaughtered.

BRUCELLOSIS in cattle is being gradually reduced. Blood tests were made of 5,185,228 cattle and 3·8% reacted. Antigen used in the official tests is supplied by the Animal Disease Station of the B.A.I. There has been an increase of 33 counties to a total of 582 in 24 states, containing 5,462,000 dairy and breeding cattle, in which the reactions do not exceed 1·0% and in which the herds are classified as modified accredited. Compensation is paid for animals slaughtered. Since calfhood vaccination was commenced on January 1st, 1941, about 375,000 calves have been vaccinated.

TICK ERADICATION AND HOG CHOLERA CONTROL [MACKELLAR, W. M.].—Over 13 million inspections or dippings of cattle, horses, and mules were carried out. Good progress has been made except in Puerto Rico, where owing to lack of funds the work was discontinued.

SWINE FEVER and related pig diseases are controlled by a special staff of the B.A.I. The importance of good sanitation and early diagnosis is emphasized. Crystal-violet vaccine was given to 7,787 pigs. The serum-culture method was tested by co-operating veterinarians in 773,605 pigs.

VIRUS-SERUM CONTROL [SKIDMORE, D. I.]—This Division supervises the production of vaccines and sera by the 73 licensed commercial laboratories. Thirty-three of these laboratories were producing SWINE FEVER virus and antiserum. In eight establishments, *Erysipelothrix rhusiopathiae* vaccine production, for co-operative experimental field use in SWINE ERYSIPELAS control, was supervised. *Brucella abortus* vaccine was also produced in licensed laboratories. The staff of the division inspected over 5 million animals for use in licensed establishments, and rejected 61,456. Potency and purity tests of all biological products are supervised by the B.A.I.—J. A. GRIFFITHS.

Extracts from Annual Reports of Agricultural Experiment Stations, U.S.A. [The matter given here is a bare outline of the work done. When papers by the staffs of these stations are published abstracts are prepared from them and included in the *Veterinary Bulletin* as a matter of routine. Details of the titles of these reports and of relevant papers contained in them will be found in the *Index Veterinarius*.] **2818**

ARIZONA, 1941–42.—Bunyea's stained antigen was found equal to the slow tube method for the diagnosis of turkey PARATYPHOID. Attempts to find the cause of INFECTIOUS KERATITIS of cattle failed. A single treatment of range cattle with derris in soapy water was ineffective in control of WARBLE FLIES. Some current work on the disinfection of milking machines is described. Some progress is being made in breeding strains of fowls resistant to PULLORUM DISEASE and to RANGE PARALYSIS.

COLORADO, 1941–42.—It is stated that evidence was obtained that the fasting of cows with MASTITIS leads to the disappearance of gross symptoms and causes a rise in milk yield. ENTEROTOXAEMIA of lambs was reproduced by the feeding of *Clostridium welchii* Type D culture or toxin, and some immunization trials were being carried out. Progress was made in studies in the pathogenesis of URINARY LITHIASIS in lambs: mag-

nesium ammonium phosphate is the principal mineral in RENAL CALCULI of sheep having cane fodder as roughage. Dietetic experiments were being undertaken in a study of COCCIDIOSIS in sheep. The anthelmintic actions in sheep of phenothiazine and copper sulphate + nicotine sulphate were compared. PHOTOSENSITIZATION in sheep was shown not to be due to *Tribulus terrestris*. "Wild lettuce" [? *Latuca* spp.] was suspected to be the cause of poisoning of herbivorous farm animals. Research was carried out on reproduction and PARASITIC DISEASES of fur animals. The iodine requirement of fowls was investigated: at least 1 mg. of iodine per kg. of food is necessary for health, and slow feather growth was corrected by 500 mg. of iodinated casein per kg. of food; this level also sufficed to offset the effect of thyroidectomy. Factors influencing FERTILITY in turkeys were studied.

CONNECTICUT (NEW HAVEN), 1940–41.—Reference is made to a station Bulletin on the examination of commercial feeding stuffs. Apparently some diseased animal tissues were also examined for poisons, which were present in 23 out of 59 samples [no details].

FLORIDA, 1939–40.—Notes are given on investigations in progress on bovine MASTITIS, rotational grazing and HELMINTHIASIS, dietary deficiency in pigs fed largely on peanuts, effect of sulphur in the diet on ectoparasites of fowls, and the pathogenesis of FOWL PARALYSIS (biochemical investigations of tissue fractions which can transmit the disease). ENZOOTIC BRONCHO-PNEUMONIA of calves was found to be the result of unhygienic management, whereby the animals sustained both helminthic disease and bacterial infections, of which *Pasteurella boviseptica* is regarded as the final death-causing factor. Experiments in calves established that water hemlock (*Cicuta curtissii*) is non-poisonous, in contrast to *C. maculata* which causes fatal poisoning; rosemary (*Ceratiola ericoides*) is evidently non-poisonous, but yellow jasmine (*Gelsemium sempervirens*) is poisonous to ruminants. Further facts about "SALT-SICKNESS", which is preventable by cobalt, are given.

FLORIDA, 1941–42.—Some success is claimed for the use of iodine in liquid paraffin (1 : 1,250) as an intracisternal injection in bovine MASTITIS. A derris powder, rotenone, soap, and water wash was effective as an ox-warble larvicide and a smear containing diphenylamine, benzol, turkey-red oil, and lamp black was effective in controlling screwworms (*Cochliomyia americana*). Horses tolerated phenothiazine in doses of 0·065 g. per kg. body weight, this dosage being quite effective as an anthelmintic.

Rotational grazing alone proved inadequate for the control of HELMINTHIASIS in sheep, but was useful in combination with phenothiazine treatment. Larvae of *Haemonchus contortus*, *Nematodirus filicollis*, *Cooperia* sp., and *Trichuris discolor* were found to be able to survive on pasture land for 372 days, and larvae of *H. similis*, *Ostertagia ostertagi*, *Trichostrongylus axei*, and *Oesophagostomum radiatum* survived for 141 days. Desiccated liver was found to contain the infective agent of FOWL LEUCOSIS; four distinct fractions were isolated, *viz*, a cell-increasing fraction, a cell-reducing fraction, an intoxication fraction, and a fraction able to reverse the normal polymorphonuclear-lymphocyte relationship. Tung-tree foliage (*Aleurites fordi*) caused fatal POISONING in cattle.

GEORGIA, 1941–42.—Methods are outlined for controlling sheep lice (*Trichodectes ovis*) and the "sheep tick" [the ked, *Melophagus ovinus*] by creosote dips or by sodium fluoride dusting powder. The common worm parasites and their control are referred to. An artificial insemination scheme for dairy cows was inaugurated.

GEORGIA (COASTAL PLAIN), 1939–40.—The success is referred to of the practice of turning pigs out on growing crops for the prevention of helminthiasis.

HAWAII, 1940–42.—Hexachlorethene + alcoholic kamala extract in capsules was found to be very effective as a cure for LIVER FLUKE in cattle when given at the rate of 10 g. + 1·75 g. per 70 lb. body weight, the dose being preferably spread over two days. A carbon disulphide extract of kamala tested in place of the alcoholic extract produced toxic symptoms. The snail, *Fossaria ollula*, was found to be a possible intermediate host of *Fasciola gigantica*, but *Succinea caduca* was not. Attempts to find a vector of *Stephanofilaria stilesi* failed. The results of a parasite survey on slaughter cattle are given in a table. Examination of the faeces of young calves revealed four species of coccidia, all non-pathogenic. The incidence is given of gastro-intestinal helminths and of the spinose ear tick, *Otobius* [*Ornithodorus*] *megnini*, among sheep in Kahoolarve island. Some progress was made in a study of the life history of the poultry caecal worm, *Subulura brumpti*; phenothiazine was found to be effective in killing and expelling it in a dose of 0·5–1 g. per bird. Some results are given of feeding lactose to increase the acidity of the intestinal tract of chickens infested with *S. brumpti* or with *Hymenolepis exigua*; fewer worms were present in the lactose-treated group.

Attempts to vaccinate day-old chicks against FOWL POX were followed by excessive mortality. A few birds with FOWL PARALYSIS and enlarged nerves recovered their walking power for a time after receiving vitamin B complex, but relapsed and did not respond to further vitamin treatment. Much dietetic work on various animals is reported.

ILLINOIS, 1937–38.—The state of knowledge on the following diseases of livestock in Illinois is described:—JOHNE'S DISEASE (not curable by chaulmoogra oil), factors of significance in resistance to PULLORUM DISEASE, poultry disease in general, a new infection in Illinois fowls—*Trichomonas gallinarum* infection—, BOVINE TRICHOMONIASIS, KETOSIS in cattle and sheep, BABY PIG DISEASE (aetiology obscure), and louse infestation of cattle (three species identified).

IOWA, 1940–41 (Part I).—During studies on inherited resistance to FOWL TYPHOID, three breeding strains of high resistance were developed. Serological tests revealed that the relative immunity of these strains does not depend on the presence of serum antibodies, which were absent from the fowls which had never been exposed to the infection. Some results of studies on bacterial morphology and virulence in a wider study on inherited resistance of mice to *Salmonella typhimurium* infection are reported. Research on FOWL PARALYSIS confirmed results obtained elsewhere; the infective agent is said to be present in contaminated litter or soil and to have an isoelectric point of pH7·5. Studies were begun on the association of nonspecific ENTERITIS with FOWL PARALYSIS, the mode of inheritance of F.P., the transmission of the iritis type of F.P. by egg, sperm, and inoculation, the production of antibodies against the agent of FOWL LEUCOSIS, and the effect of radiant energy on the course of F.L. The gonadotropic power of the pituitaries of fowls was assessed in rats: it was found to be considerable, especially that of the glands from young birds. A few data on the parasites of wild foxes are presented. Several research projects in nutrition and dietetics are briefly described.

IOWA, 1941–42. (Part I).—BRUCELLOSIS is a not uncommon cause of abortion in pigs in Iowa; other causes are being investigated. Progress in the current research on the genetic resistance of fowls to FOWL TYPHOID is described. One of the stock cultures of

Salmonella gallinarum became avirulent during culture and continued so on inoculation into fowls. A study on the resistance of mice to *S. typhi-murium* was concerned with a comparison of inherited resistance and the blood picture (as another inherited factor). The cause of FOWL LEUCOSIS is said to be a filtrable virus 100–400 mμ in diameter. A study of the effect of X-rays upon the virus was begun. Strains of fowls resistant or susceptible to leucosis have been bred. Evidence was obtained of transmission of the virus by egg and blood. A neutralizing antibody against the myeloid form of virus was produced by immunization of ducks and turkeys. Various disorders and lesions in rats fed with pork as a source of protein are described. Assay results obtained in rats of the gonadotropic power of the pituitary body from various poultry birds are given. Sheep were found to have a very low demand for vitamin E for normal breeding. Some basal metabolism studies on horses are described.

KANSAS (1940–42).—Mapharsan is said to cure BLACKHEAD in turkeys at an intravenous dose of 0·006 g. The addition of sodium hydroxide to turkey serum is said to facilitate the reading of the PULLORUM DISEASE test. Continued attempts failed to find a chemical remedy for ANAPLASMOSIS. The assassin bug (*Triatoma sanguisuga*) was proved to be a transmitter of EQUINE ENCEPHALOMYELITIS virus. The Western type of virus has been identified in man in Kansas. A disease called CANINE MENINGO-ENCEPHALITIS is referred to: its cause is unknown. Phenothiazine causes a fall in the blood haemoglobin in fowls. Results of other research work which have been published separately are referred to.

MARYLAND, 1940–41.—Studies on calfhood vaccination against BRUCELLOSIS indicate that vaccination systematically applied will be effective in controlling the disease in a herd from which infected animals cannot be eliminated. Brucellosis was eliminated from the experiment station herd before 1930, but there have been nonspecific abortions every year since then, to the extent of 5%, which is one-third of the abortions which occurred when there was infection. The problem of obtaining strains of fowls resistant to PULLORUM DISEASE is discussed. GIZZARD EROSION in chicks is said to be present at every hatchery. Vaccination seems to have played a useful part in reducing the incidence of EQUINE ENCEPHALOMYELITIS in the state. Bovine genital TRICHOMONIASIS was increasing, and also turkey BLACKHEAD.

MINNESOTA, 1941.—According to custom, all the work done was published either as a station bulletin or separately in the technical journals.

MONTANA, 1940–42.—Control of BRUCELLOSIS in range cattle with the aid of a rapid blood test [no details] is referred to. A vaccine for BLACK DISEASE in sheep was made available. DYSENTERY in young lambs was found to be controllable hygienically, as was also ARTHRITIS due to navel infection. Unspecified methods of controlling COCCIDIOSIS in cattle and sheep and FOOT ROT in sheep are referred to.

NEBRASKA, 1941.—Owing to the unreliable potency of SWINE ERYSIPELAS antiserum made by the station, the effects of the preparation process on potency after storage were studied by tests on pigeons. It was found that antiserum pasteurized, phenolized, and filtered lost 22% of its original potency; pasteurization alone caused an 8·6% loss, filtration alone a 5·5% loss, and phenolization alone (at 0·5%) no loss. Merthiolate (at 10 mg. %) caused a 5% loss. Trials with crystal-violet SWINE FEVER vaccine made in 1941 were not very successful as only 84% of the vaccinated pigs resisted test virus infection. The value of "S–4" ultra-violet lamps in antirachitic treatment for fowls was confirmed. Attention was given to the problem of preserving bovine spermatozoa and to the physiology of lactation at the puerperium in cows.

NEBRASKA, 1942.—Merthiolate (10 mg. %) was found to be a good preservative for SWINE ERYSIPELAS antiserum. Potency tests of 59 cultures for S.E. immunization showed that only 59% of them are satisfactory after 60 days' storage. Trials with "B.T.V." tissue vaccine against SWINE FEVER gave unsatisfactory results; tests with varying amounts of antiserum used in the serum-virus immunization method indicated that the use of excessive doses of serum is inadvisable. Irradiation for two hours daily by "S–4" lamps was sufficient to keep hens in good laying condition during winter and early spring. Some slight progress was made in bovine sexual physiology studies.

NEW HAMPSHIRE, 1941–42.—The toxins of staphylococci isolated from a case of BOVINE MASTITIS were of two types, α and β, the latter resisting heating at 100°C. for 30 min. Trials were begun of gramicidin, novoxil, aerosols, acriflavine, and entozon for the treatment of mastitis. The local poultry diseases of importance are listed and the PULLORUM DISEASE incidence (only 0·01% of 579 flocks) is referred to. A filtrable virus was isolated from pullets affected with "BLUECOMB DISEASE" [see also *V. B.* **13.** 18, 178 & 434]; the infection could be transmitted to fowl embryos and thence by injection or perorally to chickens. Feeding tests on two horses with "sensitive fern" (*Onoclea sensibilis*), suspected of being poisonous, resulted in the death of one horse after symptoms of brain disorder. The other horse survived after showing generalized hyperaesthesia for four weeks.

NEW MEXICO, 1941–42.—Several nutritional studies on cattle and laboratory animals were carried out. Completed work was reported in separate papers.

NEW YORK STATE, CORNELL UNIVERSITY, 1942.—Group B streptococci from human and bovine sources were compared: they were very similar in all respects. The nutrition, and also the morphology, of many bacteria including *Streptococcus mastitidis* and *S. bovis* were studied by the electron microscope. Resistance to *Salmonella pullorum* was observed to be much greater in chicks with an artificially raised body temperature than in those with a temperature below normal, due to cooling or to treatment with barbiturates. Progress was made in the breeding of LYMPHOMATOSIS-resistant fowls. Tetrachlorethylene was compared with copper sulphate and nicotine sulphate mixture as anthelmintics for sheep, each being equally effective. A single dip in a 10 : 100 : 1,000 mixture of 5% rotenone, wettable sulphur, and water was effective in killing all keds on sheep. Rotenone + sulphur (1 : 16) powder was effective against cattle red lice [? *Bovicola bovis*] and biting lice of sheep [*B. ovis*], and a 1 : 10 mixture was effective against short-nosed lice (*Haematopinus eurysternus*) and long-nosed lice (*Linognathus vituli*) of cattle. Some nutritional studies were carried out with fowls and cattle. Some results of survival time tests with bovine spermatozoa are given.

NORTH CAROLINA, 1940–41.—PARATYPHOID of turkeys is a dreaded disease in this state. It is an intestinal infection which is transmitted from hatcheries to poultry farms on the shells of the eggs. It can be controlled by orthodox hygienic measures suitable for this type of infection. A blood test is being developed.

OHIO, 1938–39.—The value of alternate grazing of pastures by sheep and cattle in order to control HELMINTHIASIS was confirmed. For anthelmintic treatment, tetrachlorethylene was as effective as copper sulphate and nicotine sulphate mixture. An experiment to dis-

cover whether malnutrition (lack of minerals and vitamin D) adversely affects the development of immunity in pigs given SWINE FEVER virus plus antiserum indicated that the diet has no influence. Ultra-violet light irradiation of milch cows did not increase production nor have any effect on BRUCELLA INFECTION, but did increase the vitamin D content of the milk. Vitamin A deficiency was found to result in damage to the germinal epithelium of the testes of calves. Riboflavin was found to be essential to pigs.

OKLAHOMA, 1940–42.—Reference is made to technical bulletins on the transmission of ANAPLASMOSIS by tabanids; the feeding of arsenic- and sulphur-containing salts to cattle had no protective value against the vector ticks nor against lice. FEATHER PICKING in chicks could be prevented by a diet containing 6–10% of fibre. This experiment station is co-operating in research on FOWL LEUCOSIS with the Federal laboratory at East Lansing.

PENNSYLVANIA, 1941 - 42. — Sulphapyridine and sulphaguanidine both gave good results in calf SCOURS. Control of FOWL PARALYSIS by selection and culling is discussed. Control of BLACKHEAD in turkeys on free range and in confinement was studied, and also the vitamin D requirements of turkeys: results were not available when this report was prepared. Adequate riboflavin was found to be necessary for good hatchability of turkey eggs.

PUERTO RICO, 1938.—Some thousands of the dung-rolling beetle (*Canthon pilularius*), which make dung into balls and remove them to underground storage, thereby removing the breeding places of horn-flies (*Lyperosia irritans*), were imported and liberated.

PUERTO RICO, 1940.—Reference is made to the shipment to Colombia of *Spalangia* spp., which are parasitic on hornflies (*Lyperosia irritans*).

SOUTH DAKOTA, 1941–42.—Hydrogen sulphide was found to be the chief gas generated in BLOAT in cattle: its absorption under pressure may be important in pathogenesis. Data are included on the seasonal selenium content of forage plants and on the acute toxic effect of selenium in dogs and chronic toxicity in rats. Under natural conditions cattle contract ALKALI DISEASE (SELENIUM POISONING) equally easily whether previously reared in selenium territory or not, and grazing density (10–30 acres per head) was shown to be insignificant in affecting the end results. Sodium arsenite (25 p.p.m. in salt) prevented most of the symptoms of Se poisoning. The Se content of the blood of cattle after continuous grazing on Se-containing pasture remained low until the plants dried up in the autumn, then rose to 3–4 p.p.m. In fowls, ground flax seed and pressed linseed oil meal inhibited poisoning by selenium. Arsenic was tried, but no results are reported, except that hatchability was less adversely affected than when a seleniferous ration was fed without arsenic.

TENNESSEE, 1941.—Some interim results with phosphate nutrition studies on rats and calves are described.

UTAH, 1940–42.—Results of treating a few cases of MASTITIS with novoxil and tyrothricin are given. Evidence of aphosphorosis in PARTURIENT HAEMOGLOBINURIA of cattle was obtained. Staphylococcal SYNOVITIS in turkeys did not respond to treatment with sulphanilamide or sulphathiazole.

VERMONT, 1939–40.—A bulletin on calcium and phosphorus utilization by dairy cattle was issued and work was continued on the feeding of vitamins A and D with different grades of hay to dairy calves. The progress of ARTIFICIAL INSEMINATION technique is reviewed.

VERMONT, 1940–41.—Studies were made on calcium and phosphorus utilization by cattle and on the effects of cod liver oil on calves. Pasteurization of milk was investigated on a laboratory scale. Results of the first two years' work on ARTIFICIAL INSEMINATION of cattle were being analysed. Results were poor except with undiluted or only slightly diluted semen used within 24 hours.

VERMONT, 1941–42.—The study of ARTIFICIAL INSEMINATION technique was continued. Various feeding trials with cattle are reported.

WEST VIRGINIA, 1940–42.—A small outbreak of RABIES in sheep attacked by a rabid dog is described. Advice on anthelmintic treatment of sheep with copper sulphate + nicotine sulphate is given. The riboflavin requirement of fowls is indicated.

WISCONSIN, 1941–42. (Part I).—Two advances in avian COCCIDIOSIS are reported :– (1) that losses can be reduced by two-thirds if birds are given a good feed as soon as they wake at dawn, since they then pick up fewer oocysts by pecking at the earth, and those picked up reach the caecal pouches more slowly, and (2) that it may be possible, if the results of early tests are borne out, to make a vaccine from oocysts attenuated by X-rays. Bovine TRICHOMONIASIS is an important disease in the state. Its diagnosis and natural history are being investigated. At least one form of "running fits" [CANINE HYSTERIA] is said to be due to some factor in wheat gluten. Some research facts about the pharmacology of dicoumarin and the effect on its action of vitamins C and K are described. Numerous nutrition studies on cattle, fowls, and rodents are reported; those most important from a practical viewpoint are the role of manganese in sexual health in bulls, the need of newborn calves for vitamin supplements, the place of urea in the dairy cow's diet, and the need for folic acid for feather growth in chicks.

WYOMING, 1941–42.—Sulphapyridine was found to be of some use in the treatment of CALF DIPHTHERIA. The position of research into FOWL LEUCOSIS is discussed. A study of parasites of domestic sheep and of wild bighorn sheep revealed some common parasites, and some which are limited to bighorns but may be able to invade domestic sheep on outlying range. Botanical data regarding the selenium problem are summarized. Results of vitamin A and gonadotropic hormone treatment of ewes are described; neither had much effect on fertility—J. E.

—. (1943). Dirección de Ganadería. Memoria Anual 1943. **[Review of Activities of the Division of Livestock, Uruguay, during the year 1943].**—*Bol. mens. Direcc. Ganad., Montevideo.* **27.** 403–412. **2819**

During the first months of 1943 a serious drought affected the livestock position in Uruguay and the Division of Livestock had to institute temporary arrangements to deal with the situation. Compulsory dipping against ticks was suspended because of lack of water, and transport of animals laws were modified to suit the circumstances. Later in the year a serious epizootic of FOOT AND MOUTH DISEASE had to be dealt with and a project was elaborated for the creation of an institute for combating this disease.

Outbreaks of SWINE FEVER, first reported in Uruguay in 1938, necessitated the importation of serum from Argentina; crystal-violet vaccine was administered during the year to 5,902 adult and 595 young pigs.

A special service to combat PULLORUM DISEASE and BRUCELLOSIS was established in the Laboratory of Animal Biology.—MILLER WATSON.

See also abst. **2637** (rabies vaccination, Pasteur Institute, Paris, 1942.)

4140—W.P.5—Dd.750—12/44—H. R. G. Ltd.—G.13.

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No. 2.—Issued June.	Indexing period previous July—December.

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